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ABSTRACT

Thirty-two papers on performance indicators are presented based on the conference themes of performance of the higher education system at the national level, institutional evaluation, and assessment of staff and students. Papers and authors include the following: "Higher Education Systems at National Level" (A. Thompson); "The CNAA as a Validating Agency" (M. C. Davis); "Significance and Limitations of the Robbins Principle" (E. G. Edwards, I. J. Roberts); "'A' Level Scores and Degree Classifications as Functions of University Type and Subject" (Donald Bligh, Richard Caves, Grahame Settle); "Examination Results: Universities and the CNAA" (A. Hindmarch and Tom Bourner); "Indicators in Times of Financial Stringency, Contraction, and Changing Needs" (John Sizer); "Indicators in Polytechnics" (M. S. Burnip, K. Durrands, S. Linsell); "Student Perception of Lecturers as Determinants of Performance" (H. Fearn-Wannan); "Student Performance: Product or Process?" (Clive Lawless); "Evaluating the Quality of Learning Environments" (Paul Ramsden); "Student Perception of the Reasons for Academic Success and Failure" (Heather A. Hughes Jones); "The Course Journal" (Roy Nolan); "Course Evaluation at Sunderland Polytechnic" (Harry Webster, Colin Biott); "Course Review at Newcastle upon Tyne Polytechnic (P. Torode); and "Validity of Indicators of Performance" (W. D. Furneaux). (SW)

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INDICATORS OF PERFORMANCE

Editor

David Billing

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INTRODUCTION

AIMS AND SCOPE

During the 1970s rapid growth in higher education came to an end. It was replaced by financial constraint and growing pressures for higher education to justify its performance and account for its use of public funds. During the next few years many difficult decisions will have to be made about provision and standards at three levels: courses, institutions and the system as a whole.

The purpose of this volume of conference proceedings is to explore the possibility and implications of developing valid and reliable indicators of performance. An invited keynote paper opens each group of contributions received on the three themes:

1 Performance of the higher education system at national level.
2 Evaluation of individual institutions of higher education against a background of various objectives and academic processes.
3 Assessment of staff and students, (a) as a means of exploring the operation of departments and of courses, and (b) as individuals.

CONTENT

The contributed papers have been refereed at two stages, firstly by the Conference Planning Committee in terms of acceptance for presentation, and secondly by the Editorial Committee, along with advisers, in terms of publication. At the first stage we were disappointed by the dearth of contributions at institutional and in particular at national level. The latter theme was saved from virtual oblivion by a group of three complementary papers on the Council for National Academic Awards, but at the expense of giving this section of the Proceedings a particular orientation. Both the institutional and national sections contained a number of papers which turned out on presentation (rather than from the abstract) to be associated with the wrong theme, and others which did not survive refereeing for publication. We had to be quite harsh as an Editorial Committee, in order to keep the total length of the volume within reasonable bounds. The consequence is that national and institutional levels of performance are even more under-represented. This was unexpected, in view of the wealth of comment at both levels in the educational press, the literature on economics and planning of education, the existence of institutional accreditation processes and institutional self-studies in the USA, the work in Europe of the OECD/CERI Programme on Institutional Management in Higher Education (as witness the International Journal of Institutional Management in Higher Education), and the visitations in the UK by the University Grants Committee and by the CNAA (institutional reviews).

The third theme - staff and students and courses - attracted many papers, and the section has been reorganized in this volume to reflect the distribution of topics of the papers meriting publication. There are five orientations in the section:

1 Work of a department.
2 Behaviour of staff.
3 Process of learning.

4 Assessment of students.
5 Course evaluation.

Again, we were surprised by the small number of papers on course evaluation, and disappointed by the virtual absence of papers on departments.

The final major section of the book is on the validity of indicators of performance. The purpose of the forum to which these papers were addressed was to compare some of the major types of research methodology and in particular the value systems inherent in these methods and in the choice of indicators of performance.

The conference was held at Brighton Polytechnic on 19 and 20 December 1979 and was attended by 163 people.

David Billing - Editor and Chairman
Donald Bligh
Clive Church
Leo Evans
Michael Kendall
Kerren Simmonds
Joanna Tait
Gareth Williams
(Conference and Editorial Committee)

1 Performance at National Level

HIGHER EDUCATION SYSTEMS AT NATIONAL LEVEL

A. Thompson Department of Education and Science

What a different conference this would have been if it had taken place a year ago! Governments necessarily pay attention to different indicators at different times, according to the situations with which they have to deal. It may be helpful if as an administrator I attempt to identify those indicators which seem to me likely to be the concern of Government over the next few years. In doing so I have to make two major assumptions at the start:

a) that higher education can in fact be valued for what it does, and is not a purely self-validating activity like, say, collecting art treasures; and

b) that whatever else it may do, the things which can be measured in its performance are important and significant. Otherwise there would be no point in these discussions.

We would no doubt all agree that in some ways higher education, like religion, escapes the measurable categories, but we have to adopt the methodological postulate that the good which higher education does can be measured. The question is: What is it most convenient and sensible to measure at any given point of time, looked at from the national point of view?

AGE PARTICIPATION RATE

If we had framed an indicator a year ago, it would have run something like this:

> 'How far does the national system satisfy national demand with efficiency and with equity as between entrants from different backgrounds?'

The broad concept which we would have been using for this purpose would have been participation and, as I need not tell you, this concept had been analysed with increasing subtlety over the previous ten to fifteen years. What had emerged was a measuring rod which while artificial in many respects was nevertheless efficacious in the sense that it provided a basis for Government policy. This was the 'age participation rate': ie the number of home entrants under 21 expressed as a proportion of the 18-year-old age group. This was diversified by adding in figures for entrants over 21 and for overseas students. The APR itself was analysed into two components - the proportion of the age group qualifying for entry into higher education (with 2 'A' levels) multiplied by the proportion of those qualifying who actually entered in any given year.

This analysis, as is well known, produced a disquieting result. It appeared that while the proportion of the age group qualifying for higher education had been steadily increasing, and was continuing to increase (actually in proportion to the staying-on rate), the proportion of qualified leavers who actually entered higher education had been steadily dropping ever since 1969 - a decline so marked indeed that the product of the two rates, the APR, having reached its zenith at 14.2 per cent in 1972 has been dropping ever since. By this last September, 1979, we estimate that it will have fallen to around 12.3 per cent.

From this point on further analysis can be undertaken, first to show the spread of participation across the social classes and secondly to adduce reasons for the falling proportion of qualified leavers who have entered higher education over the past ten years. The latter trend has been a remarkably steady one, and perhaps the key question we would have been asking ourselves a year ago is whether the root cause is a lack of provision, ie a failure on the part of the system to meet demand, or a failure of demand itself. It could of course be due to both or to one cause at one time and another later. These are significant questions from an administrator's point of view because they lead to lines of policy which might be developed to meet the apparent causes.

But times change. There is now something of a policy vacuum at national level, the result not of a lack of concern but of a change in perspective. The present Government sees it as its duty, fully supported by its electoral mandate, to deal first and foremost with the country's public expenditure problems. Education naturally has its share of these. Consequently instead of framing estimates of demand and then examining the financial implications, we are engaged at national level at doing just the opposite. Permissible limits of expenditure are being laid down, and it is necessary to examine their implications in terms of student numbers and hence of participation. Does this mean that we are no longer interested in participation as such? By no means: we shall naturally be monitoring the effects of current expenditure decisions in those terms amongst others. But it does mean that that particular indicator is not likely to be a major force in the immediate future in dictating higher education policy.

Before I turn my eyes away from that indicator, however, let me indulge in a final spasm of prophesy. The Government has not announced its expenditure plans beyond the year 1980-81. For that year it has said that it will be the intention to keep the resource level in higher education broadly the same as in 1979-80. Let us therefore assume as a hypothesis that the level of resource for higher education will remain more or less constant over the next ten years or so. Let us assume further that this results in a more or less level number of home students and that the present balance between initial education and post-initial education remains the same as it is now (an assumption to which I hope to return later). It seems likely then that after some initial fluctuation the number of young home entrants might settle down at a figure something like that for this last September - around 107,000 to 108,000. As I have said, the resultant age participation rate can be calculated to be 12.3 per cent this year, compared with 14.2 per cent in 1972-73. If the entry rate is assumed to remain constant it follows, since the total number of 18-year-olds first rises to a peak in 1982-83 and then falls again, that the age participation rate will first fall somewhat - to a figure of 11.5 per cent in 1982-83 - and then rise again, reaching a figure of around 12.6 per cent in 1987-88. By the year 1990, assuming that the entry rate remains constant that long, the participation rate will once again be approaching 14 per cent. While the participation rate will continue to fall over the next couple of years, its rate of decline will be no more marked than it has been over the past seven years, and if the arithmetic is right the trend will be reversed in a comparatively short time. It seems likely to me therefore that there will be no perceivable loss of opportunity for the young qualified people who seek to gain entry into higher education.

MANPOWER NEED

As I have already suggested, I doubt, however, whether the policy concerns of the Government over the next few years are likely to be focused on the participation factor. All the signs are that they will be more concerned with another indicator, more appropriate it may be thought at a time when money for education is tight, when we cannot afford the luxury of flooding society with graduates, when the relevant age groups are falling, and when perhaps through some perception of a diminished rate of return the proportion of school leavers likely to enter higher education in a free demand situation may be continuing to fall. That indicator, broadly speaking, is manpower need. But I must immediately qualify that because the term is associated with a certain style of planning which is discredited and, when you think about its general application, logically impossible.

Since practically all graduates go into jobs, and most regard it as the chief purpose of their education to win the employment of their choice, the employment market does at first sight seem to offer a means of measuring whether the higher education system is achieving good results. The possibility of using this as an indicator, however, becomes doubtful immediately one considers the lead times involved. The lead time in educational planning measured from, say, a relevant choice of 'A' levels to the completion of a degree, is five to six years, and in terms of effective work performance in any given occupation much longer. But surpluses and shortages in particular occupation groups wax and wane much faster than that. The signal time for them is something like two or three years at most - more often one. So though I believe there is a place for short-term indicators from the employment market, their chief use must be in that area of higher education where the demand can be most specific and lead time shortest - namely in the field of postgraduate and post-experience education. Yet even there they would be of little avail if the general pattern of the whole stock of highly qualified manpower did not lend itself to the specific types of training or re-training which experience shows to be necessary. It may be true that classics graduates make good computer specialists, but this is not a principle which is capable of universalization.

There is a sense in which the higher education system is and has to be responsive to the total needs of a culture. The broad balance of subject areas in higher education tells us something about that response. I am here referring not to individual job-specific subjects, but to broad groups such as science, technology, business subjects, and the less specific arts and social sciences. I do believe that the managers of a national higher education system may legitimately be expected to try to get this broad balance right.

In fact they have nearly always tried to. Even Robbins, who eschewed manpower planning, decreed that the arts/science balance should veer in favour of science; and for ten years the managers of the system did try to steer by that broad direction.

STEERING HIGHER EDUCATION

Here we have identified what is to my mind one of the most important policy questions for higher education over the next decade. There are two questions: first, can the system be steered, ie is it inherently steerable? And second, where should it be steered to, ie what programme should be added to the steering mechanism, and where is that programme to be derived from?

That the broad subject balance of the system can be modified through action at national level I have no doubt. The mechanisms do not need to be the same on both sides of the binary line. On one side you have the influences which the UGC can bring to bear on the development of universities. On the other you have the mechanisms which will have to be developed for managing a limited Advanced Further Education pool coupled with the secretary of state's responsibility for approving advanced courses. A more important question is whether the individual institution's perception of national needs is not more reliable in the long run than any national perception of them. Certainly a place will have to be found within any national steering system for institutional perceptions, but I would have thought that evidence was accumulating that a national steer would be welcome.

There are two difficulties facing us as we venture on the enterprise of working out a broad national programme of subject balance. One is the whole question of job specificity. We could cross-classify major employment categories with degree subject groups. A wide range of job/qualification relationships would no doubt immediately show itself. Whether the range would be too great to permit of any valid generalizations I do not know, because I have not seen any of this work actually done. We are hoping that the Department of Employment's Unit for Manpower Studies will do some initial work. I must say it seems to me a field of research which would be well worth while cultivating. The other difficulty is the familiar one that any demonstrated relationship would be only half the story: it would then have to be applied not to the employment market of the past ten to twenty years from which it is derived but to the next ten to twenty years. We are straight into the issue of technological and cultural forecasting. Formidable? Yes, but given a stable system, or rather the need to reconcile stability with growth in specific directions and therefore contraction in others, is it not going to be necessary to work out indicators on these lines?

SUBJECT BALANCE

As a matter of interest what is the subject balance now? Taking the four subject groups which I mentioned earlier the picture differs between the university sector and the polytechnics as follows:

	Universities	Polytechnics
Science	23%	12%
Technology	14%	20%
Business and professional	25%	55%
Arts and social sciences	38%	13%

These figures are not of course very meaningful as they stand. We would need to construct a time-series to show the changing trends. The interesting point which would then emerge I think is that ten years ago technology represented a higher fraction of the whole on both sides of the binary line.

The constraints on the scope for changing this balance are obvious. One is the present pattern of staffing, another is the supply of suitably qualified entrants. As to the former, we have to recognize a limitation on the rate of change imposed by the limits of staffing mobility; and as to the latter, we have to accept, as we have been doing ever since Robbins, some degree of differential entry standards as between one subject group and another.

QUALITY OF STUDENTS

This takes us straight into the question of quality. I suppose in a way 'quality' indicators are the first thing one notices about the education system. It is full of them - 'O' levels, 'A' levels, degree standards, and so on. And the literature is full of attempts to show that standards have or have not fallen. So far as higher education is concerned there is little reason to suppose that either entry or output standards have altered much over the period since Robbins - a rather surprising thing perhaps. A more sophisticated enterprise might be to explore entry and output standards in relation to different subject groups or even particular job destinations. The evidence is inconclusive. These indicators are perhaps ones we must continue to watch for any gross changes, rather than for small movements year to year.

FIRST DESTINATION OF GRADUATES

One set of figures which I find myself looking at rather a lot, though I do not think they are a very good tool for analysing the situation and forming policy judgements, are the statistics on the first destination of graduates, and the proportions entering home employment in various sectors - public services, public industry, private industry, commerce, and so on. These figures do tend to attract the attention of ministers and members of parliament because they seem to say something about the education system. Actually they are of limited value, partly because the new graduate recruits are only a fraction of the total supply of highly qualified manpower (HQM) available to the economy, and so have to compete for vacancies not only against one another but also against that part of the graduate stock which though already employed is willing to change jobs. It looks as if the supply of new HQM could be only around 4 - 5 per cent of the stock. It is therefore somewhat artificial to discuss the factors affecting new supply in isolation from the rest. But it is inevitable, simply because destination data is available for new graduates but not for the rest.

Added to which, this data is of limited use because there is good reason to think that it tells us more about the recruitment practices of the various employment sectors into which graduates move than about the education system. An interesting correlation can be worked out between the numbers of graduates entering industry for example, and the level of industrial activity in that year. Heavy fluctuations have occurred over the past ten years in industrial recruitment of graduates which seem to correspond to periods of high and low industrial output. No such fluctuations appear in the figures for commerce, which has continued to attract an ever-rising number. There is some reason for hope that industry has mended its ways somewhat. There has been a steady rise in graduate recruitment since 1975, which was a bad year. But I find myself wondering what 1979 will bring. This data comes out rather late, and while 1978 seems to confirm the upward swing, I would not be surprised if 1979 did not. I conclude, however, that these statistics are not educational indicators but pointers to a potential problem, should industrial output decline further in the future.

CONTINUING EDUCATION

I have argued that participation will be a concept of limited usefulness in the future. I now wish to qualify that. It could become important if we were to plan for a significant switch in emphasis from initial education to post-initial education. We might wish for example to forego the recovery in the APR for the young home entrant through the 1980s, in favour of an enhancement in recurrent and continuing education (RCE) for those in mid-career. This is a feature of higher education which has always been with us, but in an anonymous way. There may be strong pressures, of which the Finniston Report is only one example, to build up more systematic encouragement for RCE. If so, the participation issue would become important as an issue of balance, and also as an index of the degree to which a system of continuing education was matching demand. This opens up a whole new demand dimension. Scattered information is available, and it may be that people are already at work to devise a useable index of how much continuing education (in the particular sense of mid-career education) there is. It gets mixed up with other things. We shall, I believe, need such indicators.

FURTHER EXPLORATIONS

Balance is also the keyword in the other set of issues to which I have given a lot of attention - the broad subject mix and its relationship to the subsequent courses of graduates - a matter for future exploration and study, which we hope urgently to pursue. Linked with this are other balance issues - between undergraduate and postgraduate work for example, and not least between the two parts of the binary system. My general thesis has been that in the past we have escaped the grip of these balance questions, because we have been successfully pursuing saturation policies, accompanied by demographic growth and a nominally expanding (though actually contracting) participation rate. For demographic and public expenditure reasons we are not likely to be doing this in the future. Consequently we need a different range of indicators, and I have tried to suggest what these might be. The part which higher education research could play in this enterprise needs no emphasis.

2 Performance at National Level

SIGNIFICANCE AND LIMITATIONS OF THE ROBBINS PRINCIPLE

E.G. Edwards and I.J. Roberts University of Bradford

It will be suggested in this paper that the most significant criterion of performance at the national level is the extent to which higher education develops and to which the economy and social structures are able to provide creative expression for the potential talents of all the people.

The actual course of expansion in Britain since 1800 is shown in Figure 2.1, while Figure 2.2 gives the comparable data for the total of a group of European countries for which statistics have been obtained or researched (Britain, France, Germany, Italy, Belgium and The Netherlands).[1] Each of these countries individually shows closely analogous trends. In each case the following features are common.

1 From about 1860 to 1955 there was a steady exponential expansion of about 2.65 per cent per annum in Britain, interrupted only by the two great wars with a corresponding immediate postwar surge and ebb, and to a lesser extent by the great depression. In Europe as a whole the corresponding rate was the slightly higher one of 2.9 per cent per annum and the major individual European countries only varied between the British figure of 2.65 per cent and the Italian of 3.2 per cent. The regularity of the exponential expansion is shown by the fact that the coefficients of determination (r^2) for the linear regressions of log N_s on time were as high as .98 for Europe and .93 for Britain (and from .92 to .98 for the others).

2 There was a sharp discontinuity in 1956 (1957 for Europe with closely synchronous dates for the individual European countries) which marked the beginning of the international escalation of student expansion (about seven years before the appearance of the Robbins Report).

3 From 1956 to about 1970 there occurred the escalation in which the annual rate of increase in Britain rose to the figure of 9.4 per cent per annum and in Europe to 8.4 per cent, with individual countries in Europe and indeed throughout the advanced world showing extremely similar uniform rates of acceleration. The regularity of this new phase of expansion is shown by individual coefficients of determination of above .99 in almost all cases. Clearly this could not be explained by demographic factors,[2] which were in any case very variable and of an incomparably lower order of magnitude of change, nor by the individual vagaries of national policies or structural changes in the forms, content and institutions of higher education.

The broad explanation of the above, which the author expands in more detail elsewhere[3], is as follows. Throughout the whole period it is probable that the expansion of higher education in most advanced countries has been demand led. That is, it has corresponded more or less to the Robbins principle that provision has been made for those who are both able and with the necessary attainment and who wish to undertake it. Indeed this must have been so in those European countries for which there was for the greater part of the period almost no numerus clausus. Yet

Figure 2.1 Enrolments in full-time higher education 1800–1976: Britain

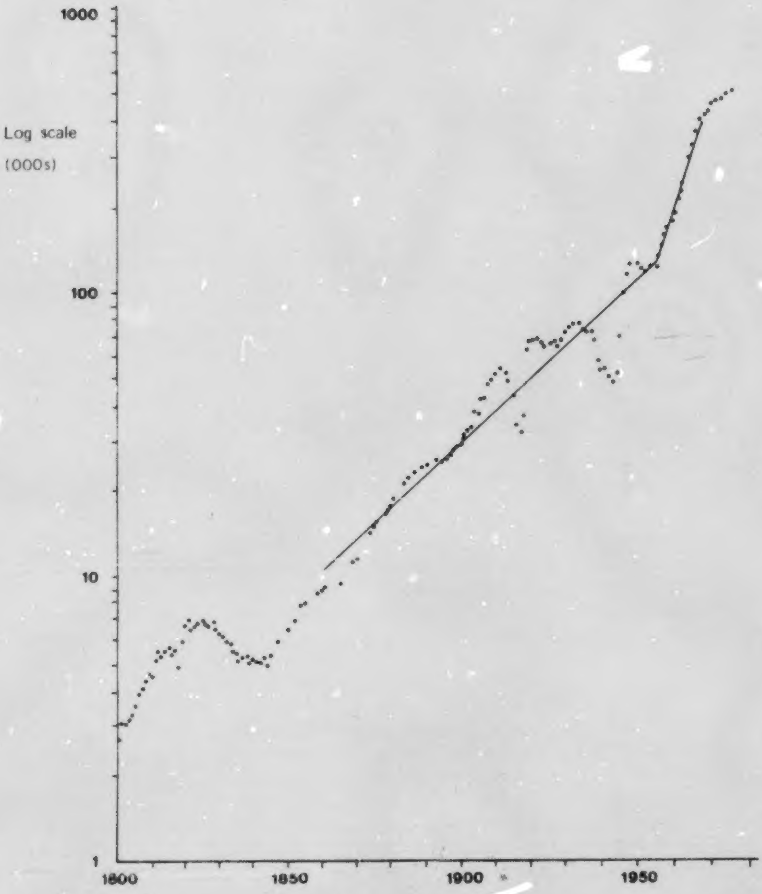
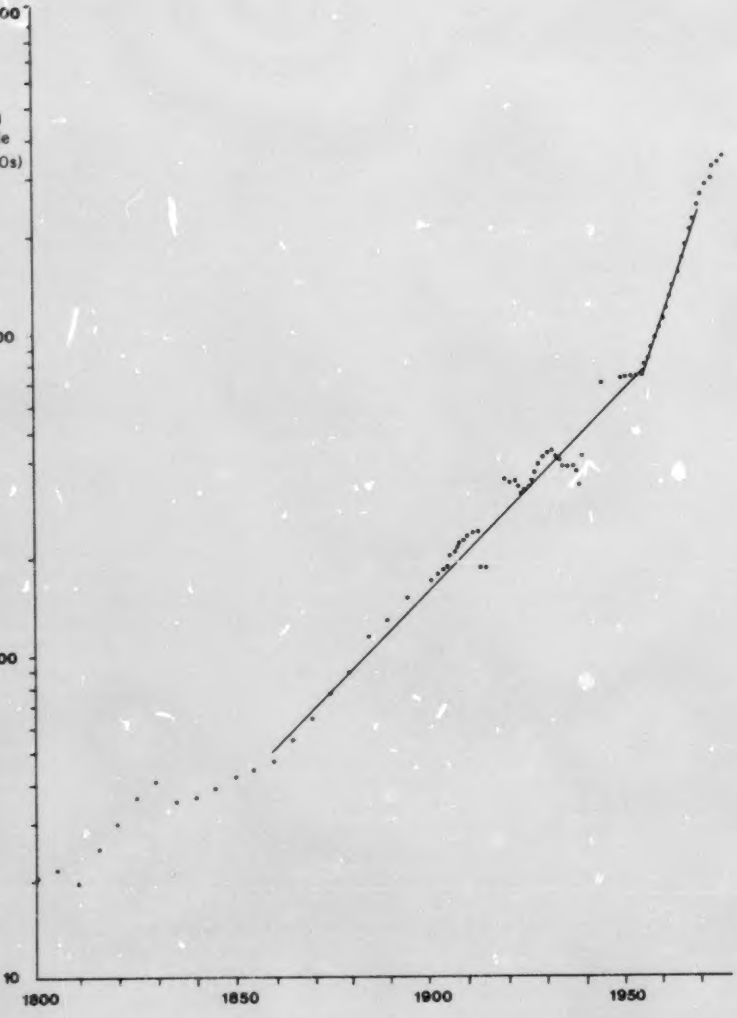


Figure 2.2 Aggregate enrolment in higher education 1800-1976: 'Little Europe'



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their expansion curves follow almost the same trends as those of Britain, which supposedly operated a system of selective entry. The obvious explanation, which is supported by such research on social selection as has been done,[4] is that effective selection took place long before the attainment necessary for higher education and that at that stage transfers have been at a very high and fairly uniform level. This process of pre-selection, as evidenced by the Crowther report[5] and the report on Early Leaving,[6] resulted in those winning a choice deriving mainly from social, cultural and economic environments where higher education was already a familiar factor. The majority of the age group were simply never in a position to be involved in the process. It can readily be shown that the quantitative consequence is that the rate of expansion of higher education will always be proportional to the concurrent size of the higher educational system, ie the existing number of students. This is the condition for an exponential form of expansion. It also follows that the size of the total group of higher education age may be irrelevant to the speed of expansion since most of the age group are virtually disfranchised. On the other hand it may well be closely related to the fluctuation in size of the age group among the children of the professional, administrative, managerial and technical classes dominating the flow to the universities and colleges. But the size of this group is not entirely determined by the biological processes of reproduction and mortality but by social and economic processes. Indeed in the half century before 1960 it was expanding at an annual rate of about 2.4 per cent per annum which was very close to the secular rate of expansion of student numbers.

The escalation from 1955 to 1970 did not fundamentally change the nature of this process. The most probable explanation was that by far the major part of it was due to a rise in the participation rate of the previously dominant social groups. For example in Britain the participation rate in all forms of full-time higher education among the sons of senior professions rose from about 40 per cent in the 50s to about 80 per cent in the 70s. In the case of university enrolments alone, it rose from 25.7 per cent in 1957 to 57.5 per cent in 1976. The social differentiations remained much the same, since the participation rate of sons of unskilled workers rose from about .5 per cent to just over 1 per cent in the same period while their daughters remained at less than half that level. The same social trends dominated in Germany and France and produced top social participation rates of the same or an even higher order. The much greater overall expansion rates over the century in the USA are, on the other hand, the result of a broader social participation in higher education, and the same may well be true of Japan as well as Soviet Russia.

The cause of the sudden rise in enrolments from the professional classes, and of a similar escalation but at rather lower levels among other groups in the same socio-economic bracket, clearly had a curiously uniform international nature. It remains to be fully explained, but was probably not due to a widening of the franchise of choice,[7] which was already very high among these groups, but rather to a sudden rise in the value given to higher education by those already able to take advantage of it. More chose higher education, probably because graduate level qualifications were now seen to be not merely one of several methods of retaining social and economic status but increasingly as essential to many of the avenues leading to it. Broadly speaking they were right. As advanced societies move into the post-industrial revolution most of the processes of production, social and financial control and organisation become subordinate to the creation and transmission of knowledge.[8]

The period since 1970 has produced a greater divergence in the rates of expansion of higher education as shown in Figure 2. 3. Since it is unlikely that there has been any significant qualitative change in the comparison between British and other European education in this period it can only mean that British overall performance is now lagging seriously behind. It is noteworthy that the relatively high buoyancy in the other European countries indicates that the rate of expansion of demand for higher education was still running at 5.5 per cent per annum, ie between the pre-1955 long-term rate of about 3 per cent and the high rate of 8.4 per cent per annum which was maintained from 1956 to about 1970. This is understandable, since the participation rate of over 80 per cent for the top professional classes must have reached the logistic limit. The relatively high rate since 1970 must be due partly to an even faster expansion of these classes, which is consistent with the recent higher flow of graduates into them, and due partly to the continued rise in the participation rates at managerial, lower professional, and other middle-class levels. There is even likely to be some small contribution from an increased relative participation among manual workers in the countries of continental Europe, though much less than that attributed by some authors such as Suda.[7]

Figure 2. 3 Proportionate increase in N_S and Q_S: 1964-70 and 1970-76

Country	**% increase 1964–70**		**% increase 1970–76**		**Q_s 1976**
	N_s	**Q_s**	**N_s**	**Q_s**	**x 10^3**
Great Britain	66	62	16	15	9.5
France	79	71	27	21	17.1
Italy	89	81	41	36	17.0
W Germany	55	49	107	104	14.2
Little Europe	74	67	42	38	14.0
USA	60	50	39	34	52.0

N_S = No of full-time students in Higher Education
$Q_S = N_S/N_p$
N_p = Total population

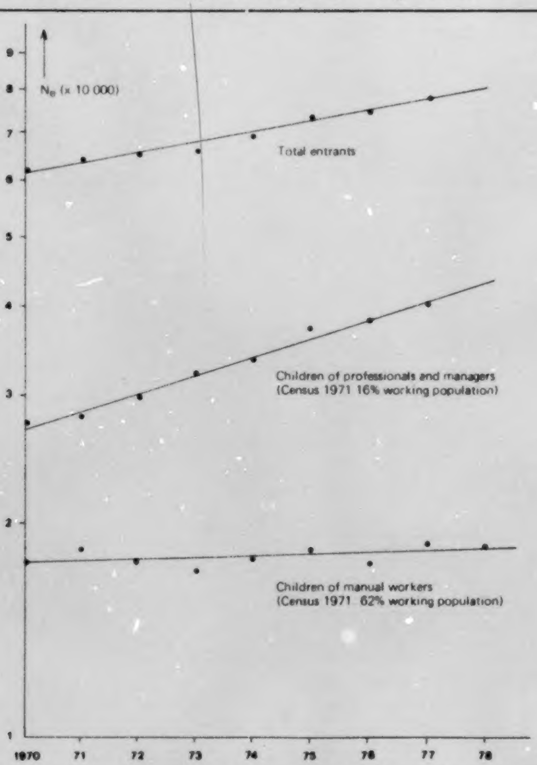
In Britain on the other hand it is most unlikely that there has been any significant rise in enrolments from among the children of manual workers. Figure 2.4 shows the static position of university enrolments from this level since 1970 compared with the continued steady expansion (at about the European rate) of 5.7 per cent per annum for the children of the social and managerial sectors of society. The data from UCCA[9] which forms the basis of this figure also show that in the same period the percentage of university students from the two latter levels has increased from 44 per cent to 54 per cent, while that of the families of manual workers has declined from 29 per cent to 23 per cent. This continued buoyancy in university enrolments from the previously dominant social groups is probably also operating in the polytechnics and demonstrates the oversimplification of the popular concept that the expansion of higher education is running out of steam. Indeed the only detectable real decline in the system until 1978 is the result of the savage forced cutback in teacher training which has been artificially and deliberately reduced from about 136,000 in 1972 to about 70,000 in 1978. The rest of the higher education system actually expanded perfectly regularly (coefficient of determination of over .98) from 1970 to 1977 with 4.1 per cent annual increase. Nevertheless the decimation of teacher training will have reduced the relative participation from manual workers[10] in higher education as a whole to an even lower proportion than that shown in Figure 2.4 for the universities.[11]

The Robbins principle that higher education should be available for all those qualified by ability and attainment to pursue it has probably obtained through most of the century we have been reviewing (with the exception of the forced withdrawal of provision for those qualified to enter colleges of education). Unfortunately the Robbins principle is clearly ineffective in securing another of the aims mentioned in the Report: that of making the most of the talents of the country's citizens. Yet there was all the evidence already there in other official reports, such as those we have mentioned above as well as in much research in the sociology of education, that such a result was inevitable.

Spontaneous demand for higher education and steady progress over the years of childhood to the 'ability and attainment' necessary for admission is not mainly dependent on the 'talents of the citizens' but on the cumulative effects of their social and cultural environment.[12] From his earliest age the son of the professional man has become completely familiar with higher education, its career significance, its basis for social status and its prior possession by a large proportion of the adults in his family and social circle. More than this he has been gently but firmly trained for it in an environment replete with books and all the facilities of high culture. Above all, his motivation has been formed so that the equally essential 'wish to do so' is only tempered by possible alternative strategies for remaining in the same social bracket. As we have suggested above the great escalation of the 60s was merely due to the relative decline of attractiveness of these alternatives and not to any extension of franchise of 'ability and attainment'. The Robbins principle was in fact the recipe for an enhancement of a meritocracy which was bound to be largely socially self-perpetuating.

On the other hand the daughter of an unskilled worker needed to be a near natural genius if she were to overcome the almost complete lack of meaning or vestige of reality that the prospect of higher education had in an environment devoid of motivation, where the occasional rare visitor from the world of higher education was not merely an unfamiliar but even an alien figure. Indeed the almost complete lack of correlation between the number of enrolments to higher education and the size of the age group among children of manual workers compared with a contrasting high correlation among the families of professional and managerial classes demonstrates that the mechanism of perception, motivation and eventually attainment for entrance is completely different in the two cases. In the latter case it is a homogeneous process, almost completely socialized, continually reinforced by every social contact within the environment. In the former case it is a heterogeneous process, stimulated from outside by the relatively rare process of external patronage by someone such as the perceptive teacher or occasionally the parent

Figure 2.4 **Home entrants to universities 1970-78: by social class**



or grandparent who unusually has some prior experience of higher education or the culture to which it belongs.[13] It follows that in the case of the working class the rate of recruitment to higher education will depend on the frequency of these external contacts rather than on the size of the age group.

If the indicator of performance at national level is the development of the potential talents of the people, then our performance is becoming steadily worse. The consequences as we approach the century of the knowledge industry should be seriously studied.

NOTES AND REFERENCES

1 The sources and methods of compilation of the data presented in Figures 2.1 and 2.2 are given in detail in EDWARDS, E.G. and ROBERTS, I.J. (1980) British higher education: long term trends in student enrolment Higher Education Review Spring 40-43.

2 A scepticism about the significance of demographic factors on the recent expansion of higher education in Europe has also been expressed by HEQUET, VERNIERS, and CERYCH (1976) Recent Student Flows in Higher Education IECD, New York.

3 Ref 1 above, pp19-23.

4 See especially: LITTLE and WESTERGAARD (1964) The trend of social class differentials in educational opportunity in England and Wales British Journal of Sociology 15.

Collateral evidence is provided in, for example:

- KELSALL, POOLE and KUHN (1972) Graduates: the Sociology of an Elite Methuen.
- OECD (1970) The Development of Higher Education 1950-67 Paris.
- BOUDON (1963) Educational Opportunity and Social Inequality: Changing Prospects in Western Society Wiley, New York.
- HALSEY, HEATH and RIDGE (1980) Origins and Destinations Clarendon Press, Oxford. Especially their conclusion, p. 205; 'In summary, school inequalities of opportunity have been remarkably stable over the forty years which our study covers. Throughout, the service class has had roughly three times the chance of the working class of getting some kind of selective secondary schooling.'

5 Report of the Central Advisory Council for Education (Crowther Report), HMSO, 1959.

6 Report of the Central Advisory Council for Education (Early Leaving), HMSO, 1954.

7 Compare the different account given by SUDA (1972) The present educational revolution: has it a common cause? Paedogogica Europea 2, and the detailed critique of this paper in Ref 1 above.

8 The author is here following the broad account of the stages of economic growth given by W.W. ROSTOW in for example The World Economy Macmillan, London, 1978. Compare also GALBRAITH, J.K. (1967) The New Industrial Estate Hamish Hamilton, London; and DRUCKER, P.F. (1969) The Age of Discontinuity Heinemann, London.

9 UCCA, Statistical Supplements (for the years concerned) UCCA, Cheltenham.

10 See REID, I. (1977) Social Class Differences in Britain Open Books, London Table 6.19 gives an analysis of the relative concentration of manual workers' participation in higher education in teacher training colleges, compared with the opposite tendency in the case of children from professional and managerial families.

11 Because of the previous lower standards of entry to teacher training colleges, the sharp reduction of the number of places in them could not be accompanied by a majority transfer of the potential students concerned to general courses in other places such as universities and polytechnics.

12 See for example: KAMIN, L. J. (1974) The Science and Politics of I.Q John Wiley and Sons, New York and London. Compare also HALSEY, HEATH and RIDGE, Ref 4 above.

13 See for example JACKSON and MARSDEN (1966) Education and the Working Class Penguin Books, London.

3 Performance at National Level

'A' LEVEL SCORES AND DEGREE CLASSIFICATIONS AS FUNCTIONS OF UNIVERSITY TYPE AND SUBJECT

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Grahame Settle University of Liverpool

INTRODUCTION

To use a manufacturing analogy, we might regard a university producing high quality graduates from low-grade university entrants as performing better than one producing graduates of indifferent quality from potentially good students. Alternatively, to use the same analogy, it can be argued that universities producing goods with the same brand name from raw materials of differing quality are misleading their customers.

This paper presents simple statistical information on 'A' level scores and degree performance as an indicator, but not as a standard, against which universities may judge their performance.

We are indebted to the Universities Statistical Record for this data.

Elaborating on a classification in the Robbins Report, six types of universities are considered:

1. Oxbridge
2. London colleges
3. Older civic universities (including Birmingham, Bristol, Durham, Leeds, Liverpool, Manchester, Sheffield and Cardiff UC)
4. Newer civic universities (mostly ex-university colleges of London: eg Belfast, Leicester, Newcastle, Nottingham, Reading, Southampton and Swansea)
5. New universities founded since the Robbins Report (eg Dundee, East Anglia, Essex, Kent, Lancaster, the New University of Ulster, Stirling, Sussex, Warwick and York)
6. Ex-colleges of advanced technology (eg Aston, Bath, Bradford, Brunel, City, Loughborough, UMIST, Salford, Surrey and UWIST)

This classification includes virtually every English university but excludes several in Scotland, Wales and Northern Ireland.

Only six groups of subjects are considered:

1. Physical sciences (any combination of maths, physics and chemistry)
2. Engineering (including chemical, mechanical, aeronautical, etc)
3. Biological sciences (biology, botany and zoology, but not biochemistry, veterinary science, medicine, etc)
4. Social sciences (including geography, economics, sociology, law, psychology, politics, etc)
5. Foreign languages (not including English as a foreign language)
6. English

All data mentioned here refers only to students who entered universities in 1973 and who graduated in 1976, with the exception of foreign languages students where data has been supplemented by reference to those entering in 1973 and graduating in 1977.

THE APPLICANT'S PROBLEM

Imagine a potential university student who has got his 'A' levels but not yet applied to universities. He wants a good degree. Given his 'A' levels, at which university is he likely to get the best result?

For example, if one department of economics accepts all its students with 'A' level scores of 9 or less (based upon 5 for a Grade A, 4 for a Grade B, etc, for up to three subjects) yet brings most of them to a 2i or 1st class standard, from the applicant's point of view it might be thought to be performing better than an otherwise similar department which receives students with 'A' level scores above 9, yet gives them mostly 2ii and 3rd class degrees.

SOME ASSUMPTIONS

Such an indicator of university performance makes innumerable assumptions which neither we, nor probably anybody else, actually believes. But in practice the following assumptions have to be made every day not only by intending applicants but by employers and the universities themselves.

a Only his final degree class matters to the applicant; other educational benefits and the quality of life at university count for nothing.

b 'A' level scores of 9 composed of 5, 3, 1, or 3, 3, 3, or 5, 4 are equivalent; 'A' level grades are of a fixed and comparable standard (whatever 'standard' means) across subjects and examination boards; grades cover equal differences in performance; a fourth or subsequent 'A' level is irrelevant; the number of years taken to get this score and the number of attempts are also irrelevant; 'A' level grades have no errors or reliability or validity, and so on.

c Degree classes are of a fixed and comparable standard across subjects and examination boards; degree classes have no errors of reliability or validity.

d Whether the university environment or initial ability is a more potent influence upon degree performance. The conflict about the last of these assumptions does not affect initial analyses of the data, although it does colour our interpretation of them.

'A' LEVEL SCORES

Figure 3.1 shows the percentage of students obtaining a degree, who entered with 'A' level scores of a given range, according to their subjects of study and type of university. Thus 0.8 per cent of students at Oxbridge graduating in maths, physics and chemistry entered with an 'A' level score of 9 or less and only 7.1 per cent of them entered with an 'A' level score of 12 or less. By comparison, 23.7 per cent, 36 per cent, 41.4 per cent, 49.7 per cent and 72.1 per cent had scores of 9 or less in the same subjects at older civic, London, newer civic, new and ex-CAT universities respectively.

Three other points are of interest in Figure 3.1. First, with the exception of English, there is a rather stable ordering across subjects of university types with the greatest proportion of higher 'A' level scores being obtained by students graduating at Oxbridge, followed in turn by the older civics, the newer civics, the new universities and finally the ex-CATs. The location of London colleges in this hierarchy varies somewhat according to subject but most typically appears between the older and newer civics. Those wishing to pass judgement may suppose that this means that academic standards are lower at ex-CATs than elsewhere, but, as will be discussed later, this is not necessarily so. It depends upon the assumptions made.

Second, leaving aside graduates of London and the ex-CATs, it appears that

Figure 3.1 Percentage of graduates obtaining 'A' levels: as a function of university type and subject

	'A' level score	Physical Sciences	Engineering Sciences	Biological Sciences	Social Sciences	Foreign Languages	English
OXBRIDGE	1-6	0.1	0.3		2.3	0.8	4.1
	1-9	0.8	3.3		11.7	6.6	17.0
	1-12	7.1	16.4		42.2	31.2	46.0
OLDER CIVICS	1-6	5.7	16.6	16.7	6.2	4.9	4.0
	1-9	23.7	47.0	52.1	32.3	25.6	27.1
	1-12	54.9	77.2	83.7	76.8	65.6	71.5
LONDON COLLEGES	1-6	14.4	11.4	46.5	11.2	16.6	5.9
	1-9	36.0	31.9	76.5	42.0	45.2	39.9
	1-12	64.8	67.0	92.7	77.9	73.4	73.9
NEWER CIVICS	1-6	15.2	20.9	25.6	7.5	11.0	1.6
	1-9	41.4	51.0	63.5	45.2	47.9	16.1
	1-12	70.2	80.7	92.7	84.3	73.0	61.3
NEW UNIVERSITIES	1-6	24.7	25.1	21.8	18.2	12.8	8.3
	1-9	49.7	64.7	65.0	58.5	49.0	27.7
	1-12	75.3	83.3	87.9	88.1	81.8	70.0
EX-CATS	1-6	47.5	44.4	58.7	24.0	2.6	
	1-9	72.1	71.8	88.7	71.8	20.2	
	1-12	92.5	88.5	100.0	94.0	59.0	

Total numbers of cases for each of the university subject combinations are presented in Figure 3.2

engineering has a greater proportion of students within the lower range of 'A' level score than the physical sciences. Except in the case of the older civics, however, the gap is not substantial and probably somewhat less than might have been expected.

Third, 'A' level scores for biologists seem to be substantially less than those for other subjects. A possible explanation is that students with biological interests and higher 'A' level scores may be doing medicine rather than biology.

DEGREE CLASSES

Given that there are differences in the 'A' level attainments of students in different universities and on different courses, to what extent are these accompanied by differences in the levels of degrees awarded?

Figure 3.2 indicates widespread variation in the distributions of degree classes. Differences can be conveniently discussed under the headings of subject differences and university differences.

In looking at subject differences, a clear split emerges between physical sciences and engineering on the one hand and social sciences, languages and English on the other. Engineering and physical sciences show the well known pattern of a relatively wide distribution of degree classes: the number of firsts, thirds and pass degrees being generally over 10 per cent each while the number of

Figure 3.2 Relative frequency of degree classes for different university subject combinations

	1st	2:1	Undivided 2nd	2:2	3rd	Pass/Ordinary	N
OXBRIDGE							
Physical sciences	21.9	10.2	46.3	6.5	11.2	3.9	721
Engineering	18.0	25.2	17.4	22.6	14.1	2.6	305
Biological sciences							
Social sciences	11.8	21.6	40.4	18.0	7.3	0.9	944
Foreign languages	13.1	21.5	40.9	12.8	10.1	1.6	641
English	15.4	24.9	38.0	16.2	4.4	1.0	389
OLDER CIVICS							
Physical sciences	12.2	29.5		29.9	17.4	10.9	1303
Engineering	10.0	26.2		35.1	16.7	11.9	1106
Biological sciences	6.9	40.6		44.1	5.2	3.1	288
Social sciences	2.4	33.6		52.9	7.5	3.7	2727
Foreign languages	4.6	37.9		47.3	7.2	3.0	969
English	4.7	36.1		51.8	4.2	3.2	380
LONDON COLLEGES							
Physical sciences	17.5	25.1		29.7	22.2	5.4	855
Engineering	16.0	29.6		31.4	14.6	8.4	561
Biological sciences	8.9	35.2		31.2	23.5	1.2	327
Social sciences	4.6	31.8		52.6	9.7	1.3	950
Foreign languages	8.5	38.5		42.6	9.1	1.4	364
English	3.3	45.8		45.1	5.9	0.0	153
NEWER CIVICS							
Physical sciences	13.1	27.3		33.0	15.0	11.6	748
Engineering	9.2	29.8		37.6	14.6	8.8	628
Biological sciences	5.0	32.9		51.6	8.2	2.3	219
Social sciences	1.5	31.8		52.9	11.2	2.7	1973
Foreign sciences	2.7	34.5		53.7	6.5	2.6	704
English	2.9	35.0		50.9	10.1	1.1	277
NEW UNIVERSITIES							
Physical sciences	10.7	25.6		31.2	22.9	9.6	676
Engineering	4.2	20.4		37.1	24.0	14.4	167
Biological sciences	7.8	28.2		41.7	18.4	3.9	206
Social sciences	2.0	34.3		52.9	7.6	3.2	1485
Foreign languages	2.7	36.3		52.1	6.2	2.7	731
English	2.6	44.9		48.3	3.1	1.1	350
EX-CATS							
Physical sciences	9.3	17.1		31.0	22.5	20.2	387
Engineering	11.3	24.1		31.5	15.8	17.3	531
Biological sciences	3.7	26.2		47.5	13.7	8.7	80
Social Sciences	2.9	30.2		55.2	8.4	3.3	645
Foreign languages	4.1	46.9		43.2	4.1	1.8	271
English							

lower seconds is below 40 per cent. In the social sciences and those arts subjects surveyed the numbers of firsts, thirds and passes are generally each below 10 per cent, while the number of lower seconds is over 40 per cent. In a number of cases it can be seen that second class degrees are awarded to almost 90 per cent of graduates in these subjects.

Although somewhat masked by the magnitude of subject variations there are interesting differences between university groups. Most obvious is the degree-class distribution for Oxbridge which is skewed towards the better class degrees. An analogous but diametrically opposite tendency is observed for the ex-CATs. Characteristic of the newer civics is the widespread use of the lower Second category, whilst the London colleges adopt a more even division between upper and lower Seconds.

STUDENT PAY-OFF

If the distribution of degree classes in different universities exactly matched the pattern of 'A' level scores among their students, our intending applicant might think that he is likely to do as well in one university as another. However by comparing Figures 3.1 and 3.2 we can see that the distribution of degree classes only reflects the pattern of 'A' level scores to a limited extent.

Hence by judicious selection of his university the discerning student applicant may get a better pay-off at one university than another in terms of his degree class. From the applicant's point of view the question is: 'At which university will someone with my 'A' level score get the best degree?' For example, while Oxbridge may award a relatively high proportion of good degrees, the levels of entrance are probably so high that, other things being equal, students gaining a varsity place might get a better pay-off if they went elsewhere.

An indication of 'student pay-off' is presented in Figures 3.3 to 3.8 for students with 'A' level scores within selected ranges (data for individual 'A' level scores is not presented in order to maintain viable subject numbers). Degree classes are scored as follows: First = 5; upper Second = 4; lower Second = 3; Third = 2; Pass/Ordinary = 1. For the purposes of this analysis the number of undivided Seconds awarded by Oxford University has been divided for each 'A' level score equally between upper and lower Seconds.

Figures 3.3 to 3.8 show that in physical sciences, engineering and languages students at Oxbridge averaged slightly lower class degrees than they might have expected elsewhere, while in English and social sciences their rewards were greater. Students graduating in engineering and biology at new universities also averaged a lower class degree than students with comparable 'A' levels in other universities. With the exception of these two groups and students of biology, graduands at older civic universities were generally less favoured in their degree classes than their counterparts elsewhere. On the other hand students graduating in engineering, physical and social sciences at ex-CAT universities with better 'A' levels (scores of 10 or greater) received a better class of degree than might have been expected from their 'A' levels alone. With this exception, students graduating in London generally received a better degree in relation to their 'A' levels than other groups. At newer civic universities students of social sciences and English seemed to be less well favoured.

These generalizations should be treated with some caution, as the mean degree result for each of the categories is based on different sample sizes. It may well be that students with 'A' level scores that are not characteristic of their

Figure 3.3 Mean degree score for physical sciences graduates: as a function of university type

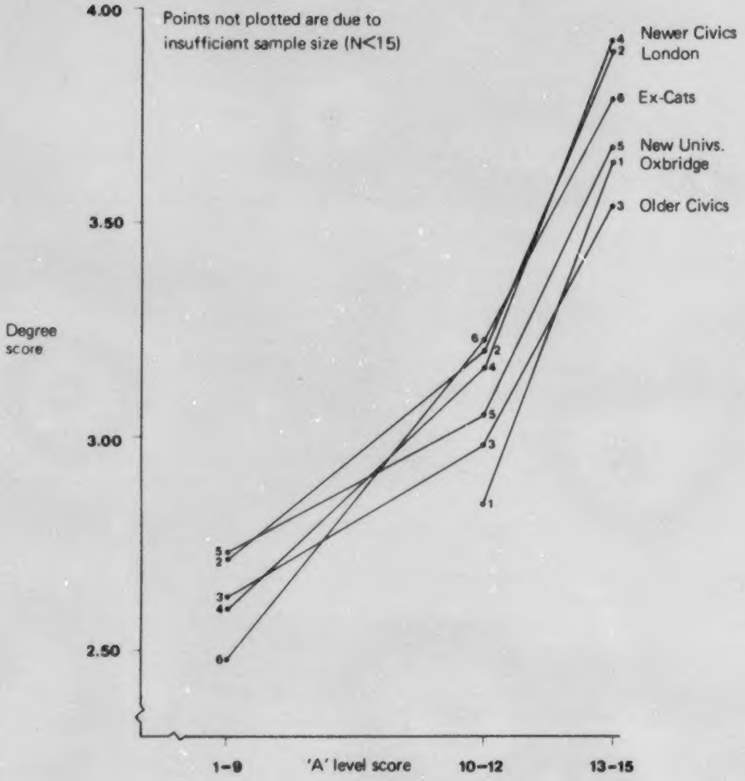


Figure 3.4 Mean degree score for engineering graduates: as a function of university type

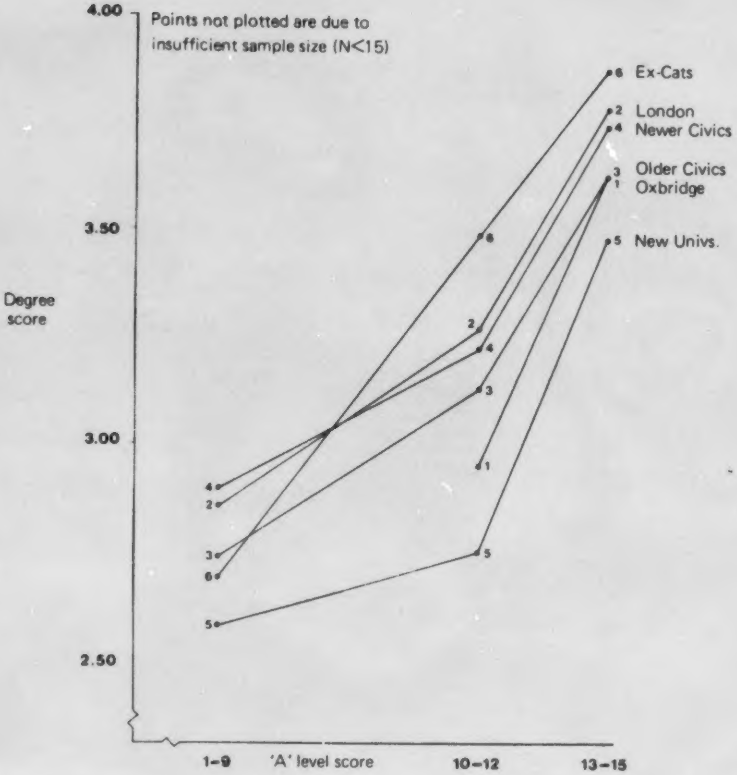


Figure 3.5 Mean degree score for biology graduates: as a function of university type

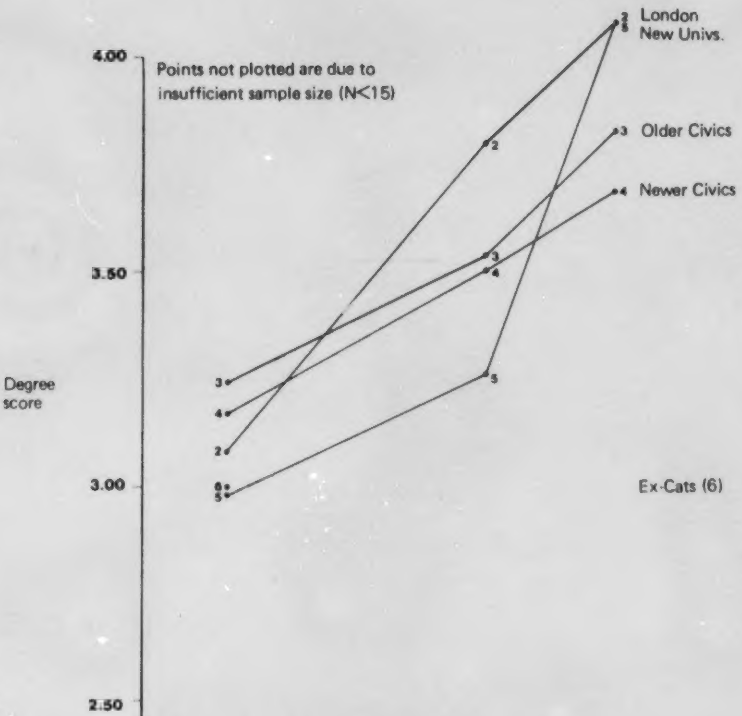


Figure 3.6 Mean degree score for social science graduates: as a function of university type

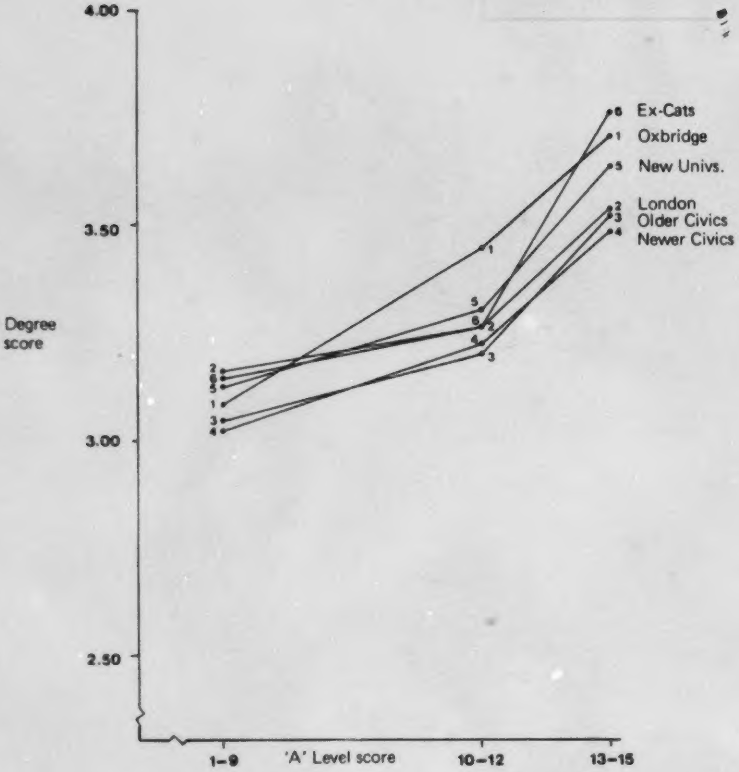


Figure 3.7 Mean degree score for foreign languages graduates: as a function of university type

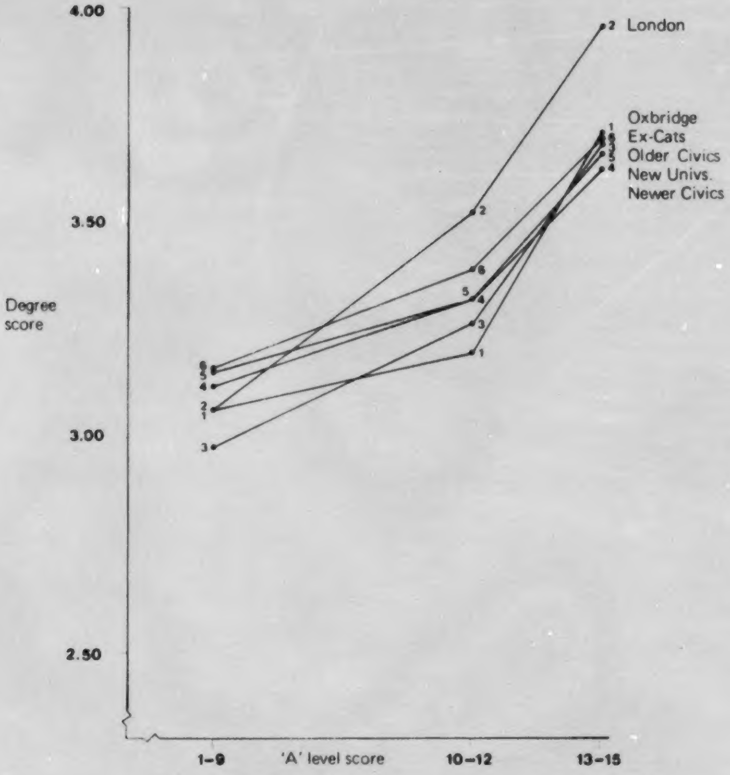
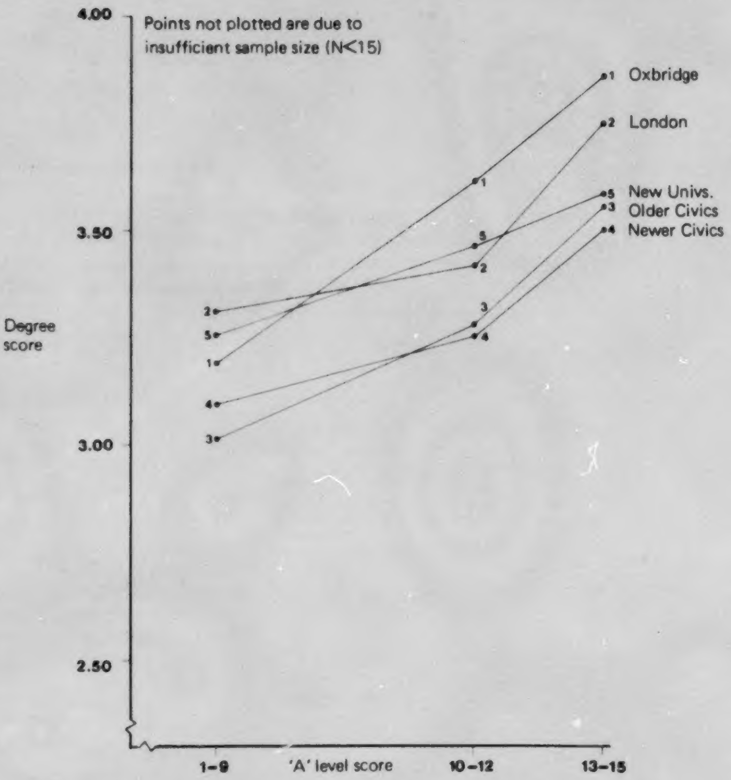


Figure 3.8 Mean degree score for English graduates: as a function of university type



university type (for instance - students scoring between 1-9 at Oxbridge) have special qualities that make them unrepresentative of the average student within their particular 'A' level category. As such, they may not be strictly comparable with students scoring in the same range who are selected for universities where that score approaches the norm.

Our potential student-applicant (particularly those with lower 'A' level scores) should not be misled by the results of Figures 3.3 to 3.8 to the extent that he over-estimates his chances of success. Mean degree result provides an indication of his relative chances given that, firstly, he is selected for his chosen course (Figure 3.1 gives some indication of his chances at this stage) and, secondly, he survives the course up to final examinations and passes them. At this stage we have no data on student wastage but we would confidently expect it to be related to 'A' level score.

All this seems to suggest that there are differences between groups of universities in the degree class an undergraduate applicant may expect on the basis of his 'A' level score.

THE ABILITY-ENVIRONMENT ISSUE

Caution is required in interpreting the results before any generalizations about standards or comparability are made. It will be shown that interpretation is dependent on assumptions held. In the first place it can be assumed a priori either that degrees are comparable or that they are not. Assuming that they are comparable implies that external examiners are successful in maintaining these standards.

In addition to, and independent of, the above assumptions, those concerned with student-assessment often make conflicting educational assumptions. These can be expressed starkly as two opposing models of academic ability at either extreme of a continuum (Figure 3.9).

Figure 3.9 Opposing models of academic ability

The ability assumption	Fixed academic ability - akin to 'g' (general intelligence) - input from teaching methods, study habits, etc regarded as irrelevant	→	Ability determines examination performance at both 'A' level and degree level. 'A' level and degree results should be highly correlated
The environment assumption	Academic aptitude is modifiable and malleable and is a function of academic motivation, teaching methods, study habits, involvement, etc	→	Implies no necessary relation between 'A' levels and degree performance - especially as university students are highly selected for 'g'

University teaching is based upon an environmentalist assumption. For centuries there has been the assumption that teaching, being in the company of great minds, seclusion from the daily pressures of the outside world, the provision of libraries and so on, can influence the academic performance of the young. Many academic staff make a precisely contrary assumption that 'initial ability' is the major factor influencing academic standards. They reason that if they reject all applicants except those with the highest grades, yet award good degrees grudgingly, far from demonstrating poor standards of teaching, they exhibit higher academic standards than those who accept students with low 'A' levels and subsequently give them high class degrees.

When students select universities they necessarily make an 'environmentalist' assumption. When universities select students they naturally assume the importance of ability.

Depending on one's preferred position, in regard to this educational dichotamy and with regard to whether or not degree standards are assumed to be comparable, differing interpretations of the results are possible. The results also have implications for the tenability of the respective positions. Of course it is recognized that these two polarizations are an over-simplification of most individuals' views on assessment but it will serve as a useful guideline for our discussion. In the case of each of the viewpoints it is necessary to consider some ancillary data (which we have not presented in detail) concerning correlations between 'A' level and degree performance.

If, with the authors of the Black Papers, we adopt the ability assumption and also the assumption that 'degrees are comparable', it would be legitimate to collapse the results over both university type and subject, to do one grand correlation between 'A' level and degree class. A high correlation would constitute a victory for the ability assumption and a low correlation a victory for the environmentalists. The overall correlation obtained is 0.322, which, though highly statistically significant, indicates only approximately 10 per cent of variance shared in common by 'A' level and degree result. It seems that adopting the 'degrees are comparable' assumption rather weakens the ability assumption. Supporters of the ability assumption are much more likely to give up their belief that 'degrees are comparable' in response to this finding than abandon their belief in the importance of ability. Indeed a strong supporter of the ability assumption would protest about the lack of comparability of degree results in different universities and subjects, especially when degree result is used as a selection criterion for future employment.

If we adopt the ability assumption and abandon a belief in the comparability of degrees, then the important comparison becomes the correlation between 'A' level and degree result for a given university-subject combination. According to the ability assumption we should expect high correlation between 'A' level and degree result for a given university type-subject combination but not such a high relationship across all universities-subjects since the latter failed to take account of the 'absolute' standard of their entrants in allocating degrees. Our results indicate significant but rather mediocre correlations (ranging from 0.18 to 0.47) which believers in the importance of ability would defend by saying that we have grouped individual universities with differing degree allocation practices into 'university types', albeit of more homogeneous types than the across-the-board analysis mentioned above. All the same, the level of the correlations does not offer much comfort to strong supporters of the ability assumption. Especially unfortunate is their failure to show any substantial improvement on the overall correlation specified above. In defence it can be argued that degree class is a rather undiscriminating indication of university performance with only a slight approximation to an interval scale. These factors combine to make the product-moment correlation a rather weak index of the relationship between 'A' level and university performance.

The two environmentalist positions (ie with or without assuming that degree standards are comparable) can be dealt with together. Any strong environmentalist case is damaged by the results of Figures 3. 3 to 3. 8 where degree score within university-subject combinations can be seen to increase as a function of 'A' level score. However the environmentalist can take refuge in the moderate correlations actually obtained (see above). On the other hand, as we have pointed out, the value of these correlations may be deflated due to the rather approximate indication of degree result which we have (ie degree class rather than examination marks).

The environmentalist's argument would be that any kind of comparability study using 'A' level as a monitor is invalidated by a weak relationship between 'A' level and degree result. In this context it is worth noting the opinion of those who have studied comparability in GCE. Bardell, Forrest and Shoesmith (1978) argue that a good monitor will 'correlate well' with performance on the measure being examined. It is a matter of opinion as to how well our monitor correlates with degree performance given the circumstances in which these correlations were obtained. At present 'A' level score is the nearest thing to a monitor that we have.

CONCLUSION

This article presents some data against which individual institutions can compare the entry standards of their graduates, the distribution of their degree awards, and the relation between the two. It is emphasized that alternative interpretations of these comparisons make crucial and often conflicting assumptions, particularly those concerned with ability and the influence of the academic environment. Hence the data provides an indicator, but not a standard, for inter-institutional comparison.

REFERENCE

FORREST, G.M., BARDELL, G.S. and SHOESMITH, D.J. (1978) Comparability in GCE Manchester, JMB.

4 Performance at National Level

THE CNAA AS A VALIDATING AGENCY

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The decade from 1964-74 saw the rapid growth of the Council for National Academic Awards and the emergence of its principal academic and resource policies, together with the development of a means of validation. Given the restricted compass of this paper it is possible only to raise three major issues; the search for comparability and its influence upon academic policies; the development of a means of validation; and the emergence of a CNAA view of the college as a suitable environment for advanced work. I shall also argue that the Council was relatively conservative, seeking to establish its legitimacy in the world of higher education, and this, together with its nature as a responding body was in conflict with innovative tendencies. Figures 4.1 and 4.2 indicate the growth of the work of the CNAA over this period.

ORIGINS

The Robbins Committee recommendation to establish the CNAA derived from the need to make available to students outside the universities the means of realizing parity of esteem: 'In any properly co-ordinated system of higher education the academic grading of individuals should be dependent upon their academic accomplishments rather than the status of the institution in which they have studied.'[1] The growing difficulties of the University of London's External degree system, with six times as many full-time students in the further education sector in 1961 as in 1957[2], with high failure rates, and the curriculum and examinations not subject to the control of the students' teachers, pointed to the need for alternative provision. The success of the National Council for Technological Awards (NCTA), created in 1955 to establish the Diploma in Technology, in raising standards of courses and colleges, giving college staff the power to devise courses together with control over teaching and examination, subject to external moderation, proved a compelling alternative. Thus the Ministry of Education proposed: 'A national body rather on the model of the National Council for Technological Awards with the power to award its own degrees to students taking courses which satisfy the necessary standards,'[3] and the Association of Principals of Technical Institutions (APTI) and Association of Teachers in Technical Institutions (ATTI) argued likewise. Robbins recommended that the CNAA should be chartered with powers to award first and postgraduate degrees at honours and pass level in a wide range of subjects although the Council's role was seen as temporary, to raise standards in institutions which would ultimately become autonomous.[4] Even without the major changes in the higher education system, the emergence of the binary policy and the polytechnics which were to make the Council's role far more significant than originally envisaged, there were ambiguities. Was not the possession of a charter and the appointment of members to the governing body jointly by the Minister of Education and the Secretary of State for Scotland[5] a blueprint for a powerful and permanent institution in the conspectus of higher education? And local authority evidence suggests that whilst accepting the award of charters to the colleges of advanced technology, they were not anxious to see any further diminution of their power in

Figure 4.1 Students registered by the CNAA for first, postgraduate and research degrees 1965-74

	FIRST DEGREES												OTHER DEGREES		TOTAL
	Science and Technology				Arts and Social Studies				Education			Total	MA + MSc	Research	
	Full-time	Sandwich	Part-time	Total	Full-time	Sandwich	Part-time	Total	Full-time	Part-time	Total				
1965	226	3718	-	3944	-	129	-	129	-	-	-	4073	-	-	4073
1966	1270	4886	-	6156	213	720	-	933	-	-	-	7089	20	195	7304
1967	1777	6810	43	8630	734	1270	-	2004	-	-	-	10634	53	230	10917
1968	2607	8989	136	11732	1346	2264	205	3815	-	-	-	15547	109	412	16068
1969	3040	10814	245	14099	2209	3220	432	5861	-	-	-	19960	167	639	20766
1970	4196	11511	543	16250	3039	3825	499	7363	-	-	-	23613	244	869	74726
1971	4860	12751	982	18593	4922	4540	469	9931	57	-	57	28581	439	1062	30082
1972	6355	13407	1467	21229	7280	5089	474	12843	117	-	117	34189	766	1350	36305
1973	7020	15166	1657	23843	10160	5394	612	16166	259	344	603	40612	816	1446	42883
1974	10633	14488	2178	27299	14268	6136	872	21276	1507	773	2280	50855	1109	1841	53805

SOURCE CNAA Annual Report, Supplemented by Statistics attached to Committee for Research Degree Papers

Figure 4.2 Volume of work of CNAA subject boards

	1964-65[1]	65-66	66-67	67-68	68-69	69-70	70-71	71-72	72-73	73-74
Number of board meetings	34	60	90	80	78	100	117	154	198	279
Number of visits	39	89	73	71	101	95	113	148	161	190
Number of courses considered	N/A[2]	110	154	145	209	231	253	293	367	502
Number of courses approved	N/A	67	59	62	100	131	159	173	207	164
Number of courses rejected	N/A	35	90	67	74	76	60	76	73	N/A
% Courses approved	N/A	61%	38%	43%	48%	57%	63%	59%	56%	N/A
% Courses rejected	N/A	32%	38%	46%	35%	33%	24%	26%	20%	N/A
% Courses still under consideration	N/A	7%	24%	11%	17%	10%	13%	15%	24 %	N/A

[1] March-September 1965

[2] N/A no figures available

SOURCE CNAA, Committee for Officers and CNAA, Annual Report 1973-4, pp.13-14 for last column education.[6] Nor did the granting of a charter in itself guarantee a general recognition of parity of esteem, an uncertainty well expressed by Mr. (later Sir Antony) Part who commented in the ministry's oral evidence: 'We came to the conclusion that "degree" is a magic word.' To which his colleague replied that the magic word was 'university'.[7]

COMPARABILITY

The CNAA's Statute 8 requires that its awards should be 'comparable in standard to awards granted and conferred by universities'[8] and that approval of courses should include the standard of work and facilities, curriculum and syllabus, quality of academic staff, entrance requirements and the appointment of external examiners.[9] But how far is comparability a condition or an experience, for power to award degrees would certainly not in itself ensure parity of esteem? Thus issues of legitimacy, status, recognition and resources were central to the Council's early development and these may well have conflicted with innovation, for institutions whose legitimacy is under scrutiny are ill-suited to innovate. Thus CNAA validation, in the sense of making worthy, comprised not only the specific approval of courses and, by implication, the institutions from which they derived, but came to comprise a range of issues depending upon the status of the Council and the colleges whose awards it validated. Comparability was far more than a rough equivalence of courses, it comprised recognition by a broader public - industry, teachers, parents, potential students - of a broad similarity to universities. Hence, inescapably, CNAA validation was powerfully influenced by existing models, if we set aside university teacher participation in validation.

The Council placed early and strong emphasis on the role of external examiners, for if they, as practising university teachers for the most part, were able to affirm equivalence of standards in the continuing spectrum of student achievement upon approved courses, then this could be convincing proof of comparability. But CNAA policy went further, for it viewed external examiners as advisors, emphasizing a fruitful exchange of ideas throughout the whole course between these and the college staff. It was noted that the external examiner was the only 'participant in the operation of CNAA degree courses who is external to both the Council and the colleges and he is therefore in a unique position to form a detached view of the Council's arrangements.'[10] And it was emphasized that, 'the external examiner testifies to the student, the colleges, the Council, and employer that degrees are awarded that are comparable to those of the universities.'[11] Choice of external examiners seems to have been cautious: in 1966 concern was expressed that colleges seemed only willing to have people with recent university examining experience,[12] whilst in 1970 a survey noted that of 613 external examiners, 561 came from universities.[13]

Pressures of status and legitimacy together with implied conflict with innovation stand out clearly in the debates about the nature of the Council's degrees and its Complementary and Contrasting Studies provision. Whilst, for reasons of economy, these are taken as case studies, it should also be emphasized that similar tensions can be seen in other policy areas, such as early validation in colleges of education, attitudes to non-degree courses, and research policy. The Council, following Robbins recommendations,[14] early decided to offer separate honours and ordinary degrees, whereas the NCTA's Diploma in Technology had been an honours equivalent award only. However, the policy of separate provision, commonly following a diagnostic first year, occasioned sharp dissension within the Council and ultimately led to a virtual reversal of the original policy. New degree areas, such as librarianship, were initially validated at the ordinary level only, due to uncertainty about standards. Beyond this it was clear that status issues were important, especially in the areas of arts and social studies. As a CNAA officer commented: 'On the CASS* side ... all the indications were that the degree currency was honours, and survival dictated an approach similar to the universities.'[15] And Robert Oxtoby noted that in the 1960s the proportion of honours graduates was rising together with a fairly strong single disciplinary orientation.[16] Whilst staff concerned with the teaching of arts and social studies expressed doubt about ordinary degrees, those in science and technology supported the provision of separate courses and saw no difficulty in distinguishing differing levels of ability. The debate about the nature of the Council's degrees lasted from 1965-71 and raised broad-ranging issues: the status of ordinary degrees, salary conventions relating to the level of degrees, the issue of Council prescription, resources - it was less efficient to provide separate honours and ordinary streams.[17] It also illustrated tensions within the Council. Indeed the issue divided not only the principal committees but the officers. CNAA ultimately evolved a new policy which abandoned the term ordinary and stated that the basis should be an undifferentiated degree with opportunities for promotion to honours. 'All students who successfully complete a basic degree course approved by CNAA shall be awarded a degree, but teaching provision may also be made for students to gain the award of degree with honours' and 'the student may map out for himself under the guidance of his tutors a programme of study that matches his interests and ability.'[18] In discussion, however, the concept of unclassified honours was withdrawn due to salary conventions,[19] and a proposal to abandon third class honours was also rescinded.[20] The honours and ordinary debate resulted in a reduction in prescription, and a move away from the provision of separate honours and ordinary awards, advocated by Robbins and indicated by NCTA experience. The principal reasons were probably the strength of university traditions,[21] mediated through college staff, influencing the Committee for Arts and Social Studies, dislike of the relatively inflexible nature of Council policy, and the general lack of prestige associated with ordinary degrees.

A second and more distinct area of academic policy was the CNAA provision of Complementary and Contrasting Studies, the requirement that, 'students following science or technological courses ... might be introduced to social or economic problems, while arts students might gain an appreciation of the place of science and technology in modern life.'[22] Giving practical expression to these ideals raised very great difficulties of prescription, of staff and student resistance to the imposition of what was seen as alien studies, and of status - 'I think the nature of liberal or general studies was associated with the idea of the technical college as apposed to the institution of higher education.'[23] In essence the debate took place between the two committees, Arts and Social Studies opposing the imposition of additional studies and the possible weakening of student attachment to his own discipline whilst Science and Technology emphasized the need for broadening and, in particular, for arts and social studies students to acquire numeracy. The NCTA heritage, with its provision for compulsory liberal studies, was also important, the more so as many members of CST had NCTA experience. The issue encompassed many aspects of higher education, the status of the Council's degrees, the relationship between the CNAA and the colleges, the extent of Council prescription of syllabuses, the definition and authority of academic disciplines and the personal nature of much of the Council's decision making. The failure of the attempt to retain compulsory Complementary and Contrasting Studies should come as no surprise. Given the specilization of the English school system, the policy conflicted with loyalties already established, and indeed sought to impose studies of disciplines already abandoned during the school years.[24]

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* Committee for Arts and Social Studies

One source of conservative drift in academic policy was the influence of university traditions and anxiety to achieve comparability. Important also was the Council's emphasis on its nature as a responding body. Thus, as one former CNAA officer put it: 'The Council is an innovating agency - it is a means whereby innovations can be secured.'[25] The Chief Officer emphasized in 1966 that approval of courses reflected 'the thinking, aims, aspirations and initiatives of the colleges, rather than any formal policy of the Council.'[26] Beyond this the volume of work faced by the Council in its early years, with a very small band of full-time staff, meant that it did not have sufficient time to engage in innovative activity. Thus, in general, innovation was left to the colleges and with some exceptions (Clive Church comments upon validation as a system to be exploited which produces a whole crop of nostrums and tactics by which validation may be brought to produce the desired result[27]), they were probably too underpowered in terms of status and resources to be an appropriate medium for innovatory initiatives. It is surely significant also that Julia Whitburn in her study of the attitudes of polytechnic academic staff found little evidence of commitment to innovation: 'From the views expressed to us it seems that there is a great deal of conservatism amongst some staff ... in other words the changes which are being implemented seem to be characterized by a certain traditional orthodoxy. This may be imposed by CNAA boards but we could not find evidence of fundamental rethinking of polytechnic educational philosophy at the staff level.'[28]

Whilst small in number, rising from two in 1964 to 21 in March 1975, the role of the officers has been important in the Council's development. It is possible that the CNAA was understaffed in its early years, a consequence both of finance and of the need to train - a process which took about six months. The officers were crucial links between the committees and the colleges and kept the Chief Officer informed of relevant developments in their areas and worked with him in suggesting future policy development. The role of the first Chief Officer, Mr. Hornby, was crucial in the Council's growth and as a former Secretary, significant in carrying over NCTA precedents. He played a major part in the formulation of academic policies, in developing relations with the colleges, and in negotiating with the Departments of Education and the local authorities over resource issues.

THE MEANS OF VALIDATION

The efficacy of CNAA validation has rested upon the development of a means of assessing the course proposals, and upon committees and subject boards, together with the visit. The essential foundations were laid by NCTA, which established a network of subject panels to consider proposals for the Diploma in Technology and the CNAA refined and developed this system to fit new circumstances. The principal difference was one of scope, for whereas in 1964 subject panels of NCTA had little over 100 members, by 1972 the subject boards in science and technology alone had over 600. This meant that course assessment had to be delegated to the subject boards and ultimately the visiting party and the role of the full-time officers became more important, due to the need to co-ordinate committee and subject board activity.

Delegation of approval powers meant that in practice assessment took place at the subject board level. As early as 1965 it was recognized that subject boards would 'carry a heavy responsibility for the standards of the Council's degree and are bound also to play a major part in experiment and innovation as far as courses are concerned.'[29] And by 1971 it was noted that the major task of the Committee for Arts and Social Studies had been, 'the gradual building up of a network of Subject Boards and Advisory Panels in the Arts and Social Studies, and the consideration of Subject Board reports on the approval of courses.'[30]

Since validation is ultimately by peer group its essence may be found in committee membership. Many professional bodies nominated directly to the subject boards at their initiation. Beyond this it is important, if feasible, to discover the manner of selection, motivation for serving, and the criteria applied by members to validation. Whilst for selection there is evidence, and for motivation at least informed opinion, for criteria judgement must, at this stage, be highly conjectural. Much of the network appears to have been built up through informal consultation and personal approaches, Thus the first officer responsible for arts and social studies noted that the committee 'just grew', and it was built up very much by personal recommendation. CNAA officers believed that university members tended to be self-selected: 'Most of them were enthusiastic ... because they found little satisfaction in their own system.'[31] I think most of the motives were very positive ones - helping the profession, helping the interests of education by serving on a national body.[32] Professor Edey, first chairman of the Committee for Arts and Social Studies, emphasized that service derived from commitment to a discipline and concern that it was well taught. This aspect is perhaps emphasized by the Council's role as a forum for curriculum debate, for the development and discussion of degree courses, an experience not available on this scale in any individual university. On balance university teacher commitment to innovation was probably quite high: 'On innovation it is true that for the most part, university participants in CNAA would be people who had a sympathy for innovation for one reason or another ...'[33]; although of course it was also possible that some were present to act as guardians of standards, even to prevent certain developments. Burgess and Pratt note in relation to the CNAA that 'one of the most productive uses to which conservatives can be put is the testing and validation of reform.'[34] College teacher membership came increasingly to derive from college academic board nomination, consequent upon Council policy to associate colleges more closely with validation, but certainly members' motivations might differ. In some ways, perhaps, membership of a CNAA subject board might imply special recognition in a profession. CNAA officers were significantly less enthusiastic about university than college teachers. 'You found the college teacher thinking very much of the position of his own institution, of the position of the colleges and so on. Its very difficult to say that they submerged themselves in the CNAA or that they didn't'. Mr. Hornby thought that college teachers were very variable, but there was some tendency for horizons to broaden as experience widened. Another former officer stressed that those who were unable to slough off residual parochialism would be excluded from visiting parties.[35] Again some motives may have been questionable: for example, CNAA committee membership might have enabled some to avoid serious research. Comment upon the general contribution of industrial members was scarce, though a former DES officer, who had acted as an assessor, felt that some of the early industrialists had contributed little.[36] Certainly the general impression from CNAA archives is not one of assertiveness, indeed less than under NCTA, or of pressing the Council over special issues.

What general conclusions may be drawn about CNAA validation? Firstly, the experience of validation is a transaction between two groups of participants, often relatively equal in knowledge and experience but unequal in power. In particular the sanction of approval or non-approval is very powerful, since rejection of a course proposal may well have far reaching implications for the standing of the department and the members concerned. Certainly validation is valuable in requiring the presentation of specific aims and objectives, although this leaves open the question of whether this is what is really taught or whether it represents a strategy for obtaining approval.

Burgess and Pratt have argued that external validation in general and the CNAA in particular encourages innovation. 'Our view is that in higher education people are more likely to innovate if they have to face external validation.'[37] Yet Harold Perkin noted that with the CNAA there would be 'strong motivation' to make courses the equivalent of university degrees and that 'it is highly probable, if not inevitable, that the polytechnics will approximate more closely to universities in their standards and methods of work ....'[38] Examination of Council academic policies ranging far beyond those discussed in this paper, and the nature of validation suggest strongly that they had conservative implications. Colleges anxious to obtain approval would seek information from both institutions and individuals about the CNAA's implicit criteria and attempt to mould their courses in appropriate ways. A sense of standards would gain currency. Given CNAA stress on the highest standards, upon the need to maintain or achieve comparability, together with the nature of validation, the consequence seems to have been to bias CNAA degrees in conservative directions.

All this is not to deny the creative role of the validation process, the subject boards acting as fora for curriculum debate in their area, bringing together the different traditions and experience of industry, the universities and the colleges. Subject boards did exercise influence on colleges seeking strategies for approval. Much of the process was probably intuitive, primarily the quality of academic staff as exhibited through the papers submitted, the impression received and the discussions which took place at the visit itself. Strongest of all is the pervading informal individual influence. As a CNAA Officer commented: 'I can't put it down to an individual, but you can bet your bottom dollar that it was an individual at some point or another.'[39]

THE COLLEGE AS AN ENVIRONMENT

A most significant aspect of CNAA validation, the source of considerable recent controversy, has been the assessment of the college as a suitable environment for CNAA course provision. Strictly speaking the charter and statutes gave power only to approve courses but the first Chief Officer decided to carry on the NCTA tradition of assessing the college as a whole.[40] Such a development was inescapable, for validating several courses at the same college inevitably obliged the Council to explore academic resource relationships between departments, and a concern that CNAA requirements were observed would ensure that the Council would come to take a wider view of the functioning of the college. Once established through a process of case law, relating largely to the regional colleges and the polytechnics, this view would be used as a yardstick against which to measure other institutions. Thus there emerged through empirical processes a body of judgements about the policies of resource provision in the public sector of higher education which was unrivalled, though not necessarily uncontested.

Over time the Council evolved authority and criteria relating to resource provision, derived from the detailed assessment of individual courses, departments and colleges, a personal and institutional landscape of rich diversity. The heart of the Council's view was an assessment of the college as possessing a suitable climate for advanced work. The view was based both upon tangible resources and an intuitive judgement of the whole nature of the college, springing from the visiting party's experience, particularly, as later developed, from the quinquennial visit. The CNAA was concerned not only with the specific provision of resources - staffing, buildings, equipment, libraries, etc, but also with the nature of college academic management and government 'as an indicator of the effectiveness with which colleges perceived the need for resources and their manner of disposal.'

Council assessment of the college grew out of the NCTA heritage, where the first diploma proposal from a college led the National Council to consider academic and resource provision. The CNAA further developed this policy, an important influence being the issue of the Notes For Guidance for Polytechnics (Aministrative Memorandum 7/67) which led the Council to develop a more specific interest in college management[41]. Thus emerged the quinquennial visit, an attempt to assess the overall growth of the college's resource provision, its development plan and the effectiveness of its academic management. The basis of dialogue was substantial documentation submitted by the college. Topics of concern ranged across the whole field of the college's activities, including resource provision (building programmes, libraries, staffing), research commitment and the effectiveness of the academic organization. Conclusions were often crisp.

> 'The College does not appear to understand the full meaning of planning; for example the need to base the development of courses on the resources available. The college's attitude to matters such as teaching programmes and the opportunities for staff to undertake research and other postgraduate work does not appear to be appropriate. In short, the environment is not felt to be one in which advanced work can flourish.'[42]

Beyond the general assessment of the college the Council also developed views on specific resource areas. Thus in Statement Number 3 it emphasized the need for adequate staff to be in post or to be appointed.[43] In 1968 it was argued that staffing was 'by far the most important factor in the consideration of a course' and 'the course must be under the leadership of suitably qualified and experienced senior members of staff ....'[44] Emphasis was placed on the general quality of the academic staff of a department, as evidenced by the papers they submitted, and impressions they made at the visit. The Council also paid substantial attention to research, links with industry, and the teaching burden of individual staff. The Business Studies Board commented in 1967 that: 'An accurate assessment of the teachers available for a course could be a more reliable guide than syllabuses to the standard likely to be achieved. A main purpose of a visiting party should be to probe as far as possible the intellectual calibre of the college staff.'[45] Deficiencies could be remedied by the appointment of additional staff, the development of research, the acquisition of industrial experience and, occasionally, by the removal from post of senior staff.[46] In the latter case the Council's judgement was about competence in relation to CNAA courses only, and did not necessarily have bearing upon other courses a department might offer. Overall the range and variety of visiting party reports on staffing suggests that the definitions of adequacy were not explicit, but rather implicit: an intuitive judgement derived from the circumstances particular to each course proposal.

Library provision was an area where the Council appears to have made a significant impact upon provision in the colleges. Policy did not simply embrace the number of volumes, but extended to the quality of the library staff, the place of the librarian in the college's academic structure, the location of the library relative to the remainder of the institution. That there were serious library deficiencies in the public sector was acknowledged by many people including DES officers.[47] So considerable was the Council's concern that in 1969 its Librarianship Board drew up recommendations as a guide to the minimum necessary provision. Whilst two years later these were withdrawn, lest they came to be regarded as norms, they do appear to have encouraged improvement. To some extent the Council's approach had been relatively prescriptive, but probably far more important than this were the steady hammer blows of visiting party reports, highlighting weaknesses, suggesting remedies and commending adequate provision.

Council concern also stretched to other resource areas, the provision of staff accommodation, equipment, social and residential facilities. Indeed unease over staff office provision was sufficient to cause a meeting with DES officials.[48] It may be thought that horizons which embraced the exact complement and area of staff offices were limited: yet this spatial concern rested upon a wider vision, that of the academic staff pursuing a life of research and scholarship, conducting tutorials and a creative intellectual life, divorced from the perhaps sometimes stereotyped heritage of the world of the technical college.

Although lacking the power to allocate resources the Council steadily amassed a fund of expert knowledge which bore fruit in the Council visit and in the assessment of the college as a whole, the need for which is a liberal but necessary interpretation of its charter powers. In general, as in other fields, the CNAA responded to events more than it mastered them. Moreover in its first decade the Council had encountered favourable winds on the journey to raise standards, and the deteriorating economic climate from the early 1970s would face the CNAA with new challenges.

CONCLUSION

It should be emphasized that this paper has only covered certain limited aspects of the CNAA's development and that the author has written more extensively on the subject elsewhere.[49] Overall it is suggested that the CNAA in its first decade pursued relatively conservative policies, dictated by the need to establish comparability with university degrees, by the nature of its means of validation and by its emphasis on its role as a responding body. It is not denied that the CNAA could be used to secure innovations, the strategy perhaps pursued by the North East London Polytechnic in particular, but that both the Council and the colleges were underpowered in status and resource terms, which made an unfavourable climate for innovation. This conclusion may be thought contentious in view of claims sometimes publicly advanced for the major innovative role of the Council, and, of course, there have been significant changes since 1974. Nor is it denied that many individual subject boards did creative and imaginative work and brought new areas under the panoply of the degree. However it does rest upon evidence, both substantial exploration of CNAA archives and interviews with past members and officers[50], and seeks to establish a perspective of the Council's development rather than to offer an apologia to advance the claims of the public sector of higher education in contrast with the university sector.

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5 Performance at National Level
EXAMINATION RESULTS: UNIVERSITIES AND THE CNAA

A. Hindmarch and Tom Bourner Middlesex Polytechnic

The structure of CNAA and university Honours degree classifications during the period 1971-75 is analysed in Figures 5.1, 5.3 and 5.4 by subject. This paper seeks both to compare the level of awards in the two sectors of higher education and to examine the performance of students in three broad subject areas: science and technology; arts; social sciences. Aggregation into these three areas follows the practice of the DES in its publication of university statistics. This has resulted in the exclusion of CNAA subjects which have no obvious counterpart in the universities. On average those CNAA subjects excluded did marginally better than those included and thus the figures in Figure 5.1 tend to understate the overall CNAA results. The published university data contains some results in which second class awards are not divided into upper and lower divisions. These second class awards were eliminated from the data, with the effect of biasing upwards the proportion of 'good' degrees in the university sector. Also joint, combined and 'other' degrees were eliminated from the data as published to improve the reliability of the comparison both between the sectors and the broad subject areas.

Two features stand out from an examination of Figure 5.1. It is clear that the proportions of first class and 'good' degrees awarded by the universities exceed those awarded by the CNAA and the order of magnitude of the differences is such that it is unlikely to be explained by the biasing of CNAA and university results referred to in the previous paragraph. Secondly, the proportion of first class degrees awarded by both sectors is significantly higher for science and technology subjects than for arts subjects, which in turn is significantly higher than for the social sciences. The proportions of 'good' degrees awarded display a similar pattern for the CNAA results but in the universities the arts subjects award marginally more 'good' degrees than science and technology. In both sectors social science subjects clearly achieve the lowest results.

What hypotheses can be suggested to explain the lower proportion of 'good' degrees awarded by the CNAA? It is possible that the level of entry qualifications may provide at least an a priori explanation. Figure 5.2 shows the GCE 'A' level 'scores' of CNAA and university entrants during the period 1971-75. The table reveals that the entry qualifications of university students were significantly higher than those of students entering CNAA first degree courses. The lowest university 3 'A' level score is 9.56 (in science and technology) whereas the highest CNAA 3 'A' level score is 7.21 (arts).

Compared to this difference in entry qualifications the difference revealed by Figure 5.1 in the proportion of 'good' degrees awarded in the two sectors of higher education may seem small. A possible explanation for this follows from the suggestion that polytechnics and other higher education institutions in the public sector place more emphasis on teaching than research in the allocation of staff time. Another possible explanation for the relatively low percentage of 'good' degrees awarded by the CNAA is that the standards set by institutions offering CNAA degree courses are more rigorous than those imposed by the universities. Institutions and staff who are relatively new to examining may be more apprehen-

Figure 5.1 Degree classes by subject group: CNAA and universities 1971-75

	% of Honours graduate awards				Total Honours graduates	% of 'good' degrees: col (1) + col (2)
	(1) 1st	(2) 2:1	(3) 2:2	(4) 3rd		
CNAA						
Science & technology	9.6	33.2	41.5	15.7	8,281	42.8
Arts	4.8	31.2	48.7	15.3	1,161	36.0
Social science	1.9	25.1	54.7	18.3	5,709	27.0
TOTAL	6.3	30.0	47.0	16.7	15,151	36.3
UNIVERSITIES						
Science & technology	13.0	30.7	37.6	18.7	58,569	43.7
Arts	7.1	37.6	45.3	10.0	43,999	44.7
Social science	4.4	33.2	51.7	10.7	37,477	37.6
TOTAL	8.8	33.5	43.8	13.8	140,045	42.3

SOURCES CNAA Annual Reports
DES Statistics of Education. Vol 6: Universities

Figure 5.2 'A' level GCE scores of accepted students: CNAA and universities 1971-75

	Average 'score' per candidate with 3 'A' levels		Average 'score' per candidate with 2 'A' levels		'A' level entrants with 3 or more 'A' levels	
	CNAA	Universities	CNAA	Universities	CNAA	Universities
Science & technology	6.65	9.56	3.93	4.95	47.5%	84.3%
Arts	7.21	10.53	5.29	6.75	60.4%	83.8%
Social science	6.64	9.86	4.69	6.54	54.3%	83.6%

SOURCES UCCA Statistical Supplements to the Annual Reports
DES computer printouts (for CNAA data)

NOTE In computing these 'scores' university data for 1972 was omitted as it was not published in the UCCA Statistical Supplement to the Tenth Report, 1971-2.

Figure 5.3 First degree results 1971-75: CNAA

	% of Honours graduates awards				Total Honours graduates	Honours degrees as % of all awards	% Honours graduates with good (1 + 2:1) degrees %
	1st	2:1	2:2	3rd			
SOCIAL SCIENCE							
Accounting	1.9	11.3	52.8	34.0	106	82.8	13.2
Bus. studies	2.3	28.9	54.8	14.0	2,768	88.2	31.2
Economics	1.9	24.7	50.7	22.7	831	85.5	26.6
Geography	1.0	18.9	62.6	17.5	206	98.6	19.9
Law	1.0	15.9	56.1	27.0	1,160	93.4	16.9
Politics /govt	1.6	27.6	53.0	17.8	185	72.6	29.2
Psychology	3.0	37.0	54.0	6.0	100	97.1	40.0
Sociology	2.3	29.2	55.2	13.3	353	98.9	31.5
Sub Total	1.9	25.1	54.7	18.3	5,709	89.1	27.0
ARTS							
Architecture	10.0	27.8	42.8	19.4	320	77.5	37.8
English	0.0	29.5	45.9	24.6	61	64.9	29.5
History	4.0	24.0	72.0	0.0	25	96.2	28.0
Languages	2.4	32.9	51.2	13.6	633	80.6	35.3
Music	5.3	31.9	47.9	14.9	94	96.9	37.2
Theology	10.7	39.3	46.4	3.6	28	73.7	50.0
Sub Total	4.8	31.2	48.7	15.3	1,161	79.9	36.0
SCIENCE & TECHNOLOGY							
Aero-eng.	11.1	36.5	36.5	15.9	126	86.3	47.6
Chemistry	11.5	31.7	40.2	16.6	908	68.7	43.2
Civil eng.	7.7	31.8	44.2	16.3	988	39.1	39.5
Combined science	8.2	29.6	44.5	17.7	537	55.8	37.8
Electrical eng.	11.8	34.1	39.2	14.9	1,482	52.8	45.9
Geology	2.8	34.9	50.5	11.8	109	100.0	37.7
Life sciences	5.2	37.8	44.3	12.7	955	76.2	43.0
Maths. stats. comp.	11.5	33.2	37.8	17.5	1,368	59.9	44.7
Mech. eng.	11.1	31.5	39.8	17.5	1,328	56.3	42.6
Pharmacy	5.0	34.2	51.5	9.4	480	37.9	39.2
Sub Total	9.6	33.2	41.5	15.7	8,281	55.1	42.8
TOTAL	6.3	30.0	47.0	16.7	15,151	66.2	36.3

SOURCE CNAA Annual Reports

Figure 5.4 First degree results 1971-75: universities

SUBJECT	% of Honours graduates awards				Total Honours graduates	Honours degrees as % of all awards	% Honours graduates with good (1 + 2:1) degrees %
	1st	2:1	2:2	3rd			
SOCIAL SCIENCE							
Accounting	3.5	33.9	52.2	10.4	404	62.3	37.4
Bus. studies	2.5	28.3	50.5	18.7	2,034	82.7	30.8
Economics	4.7	26.4	56.2	12.8	6,921	92.2	31.1
Geography	4.5	38.2	51.3	6.0	7,082	96.9	42.7
Law	5.1	30.5	49.0	15.4	8,225	81.7	35.6
Politics/govt	2.4	38.7	50.6	8.3	2,588	97.8	41.1
Psychology	5.9	39.9	47.1	7.2	4,263	95.3	45.8
Sociology	3.6	33.2	54.8	8.5	5,960	95.1	36.8
Sub Total	4.4	33.2	51.7	10.7	37,477	90.6	37.6
ARTS							
Architecture	9.5	38.7	43.4	18.4	2,326	84.0	38.2
English	7.2	37.5	46.9	8.5	9,910	97.4	44.7
History	6.3	41.3	44.2	8.1	8,252	97.6	47.6
Language	7.0	37.7	45.3	9.9	20,334	96.6	44.7
Music	6.5	36.2	46.0	11.2	1,443	90.7	42.7
Theology	7.5	32.3	43.4	16.8	1,734	79.9	39.8
Sub Total	7.1	37.6	45.3	10.0	43,999	95.2	44.7
SCIENCE & TECHNOLOGY							
Aero. eng.	11.7	25.2	40.1	22.9	950	87.7	36.9
Chemistry	16.3	28.6	32.8	22.2	8,441	83.1	44.9
Civil eng.	9.9	27.6	41.8	20.8	5,970	77.9	37.5
Electrical eng.	12.9	27.2	37.5	22.4	6,848	74.8	40.1
Geology	6.5	35.2	44.0	14.3	2,434	92.7	41.7
Life sciences	9.7	39.5	40.3	10.5	15,064	92.4	49.2
Maths. stats. & comp.	19.7	22.7	31.6	25.9	10,841	83.2	42.4
Mech. eng.	12.6	30.1	37.4	19.9	5,714	77.7	42.7
Pharmacy	6.9	35.5	49.0	8.6	2,307	82.0	42.4
Sub Total	13.0	30.7	37.6	18.7	58,569	83.4	43.7
TOTAL	8.8	33.5	43.8	13.8	140,045	88.8	42.3

SOURCE DES 'Statistics of Education' Vol. 6: Universities sive in awarding high honours. In addition it has been suggested that it is more difficult to achieve high honours in areas where student numbers are expanding rapidly and the average age of teachers is lower than normal. During the period under review polytechnics were very young institutions, undergoing rapid expansion, and with many young staff particularly in the social sciences.

It is clear from Figure 5.1 that subject area has a more important effect on the pattern of Honours classifications than the sector of higher education awarding those classifications. For example, despite the higher overall results for the universities, a CNAA student of science and technology was still more than twice as likely to be awarded a first class Honours degree than the university social science student. Differences in entry standards between subject groups might offer an a priori explanation. Figure 5.2, however, shows that in the period examined there was no systematic tendency, either in the universities or the CNAA, for entry qualifications in science and technology subjects to be higher than in other subjects nor for those in the social sciences to be lower. Thus entry standards do not seem to help explain the different levels of award in the three subject areas. It is possible that the type of 'A' level background could affect the performance of students in the different subject areas. It is likely that in arts and science and technology many students will have studied similar subjects at 'A' level. In social science a greater proportion will be experiencing their subject for the first time at degree level. The greater element of self-selection in arts and science and technology, based on 'A' level experience of aptitude and motivation, could lead to better performance on degree courses.

NOTE

For a more detailed discussion see 'CNAA degrees in the social sciences - a comparative analysis' by T. Bourner and A. Hindmarch, which it is hoped will be published in the March 1980 edition of Studies in Higher Education. In this paper the impact of student wastage is analysed and found not to have a systematic relationship to the variations in degree classification, to any significant extent. Also examined is the proportion of students following non-Honours programmes in different subject areas. The data on this also suggests that explanations for the variation in Honours degree results must be sought elsewhere.

6 Performance at National Level

MAINTAINING THE STANDARDS OF THE CNAA

David Billing Council for National Academic Awards*

SIZE

The origins and first decade of the CNAA have been explored by Martin Davis[1], and in one sense the performance of the Council might simply be measured by the fact of 122, 000 students being registered on its 1620 courses in 150 institutions outside of universities in the UK (1978-79 figures). However, as the Duke of Edinburgh reminded us at his last degree congregation as President, size is not everything. Are these students studying for awards which are of comparable standards to those of universities? Ensuring this was the task set the CNAA by its statutes, and to answer this question, we must ask what might be meant by comparability of standards.

COMPARISON WITH UNIVERSITIES

One sort of comparison is that provided by Tom Bourner and Arthur Hindmarch[2], but this simply indicates that the pattern of degree classifications repeats the same variations across subjects that are found in universities. This might be seen as an indication of the effectiveness of the system of external examiners. However, the issue is complicated by the significantly lower entry qualifications for students admitted to CNAA courses as compared with university courses. We are familiar with the lack of a strong or reliable correlation between various means of measuring the initial performance of students and their achievements in degree examinations, so the comparable pattern of achievement at the end may not be surprising. What factors are at work to produce the observed result? While hypotheses may be advanced about the nature of the courses themselves, the approach to teaching on them, and other characteristics of the student populations, there do not seem to be ways of testing such hypotheses, and comparisons of this kind are therefore inconclusive.

In fact, although the subjects in which CNAA courses are offered cover the same range as do universities (with the omission of medicine, dentistry and vetinerary surgery), the institutions offering the courses have often claimed[3] different objectives from universities, for example in meeting local needs, being vocationally orientated, providing a range of interlinked qualifications, or offering opportunities to groups of students not otherwise catered for. Evidence of this might be the larger proportion of sandwich degree courses offered under the CNAA, the greater importance of part-time education, the greater attention to transferability of students (eg DipHE arrangements) and multiple entry routes (eg via TEC and BEC qualifications, Polymaths and other preparatory courses), the applied flavour of many courses, and innovatory courses designed for mature students or to offer negotiable curricula or flexibility of choice of other kinds. There are examples of all of these features within the university sector, so that again comparisons of the nature of the education offered are not simple. Supposing the differences of institutional objectives to be sustained in the courses offered, how could one compare the standards of awards gained on courses which differ in their aims or in their target groups of students? That we must abandon the attempt to demonstrate comparability (but not comparability as an aim) is reinforced by Bill Williams' recent paper[4] emphasizing the lack of 'research' support for external examiners. The system is an open one, and the feedback loop needed to close it has not yet been devised, nor I suspect could it be.

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*NB The views expressed herein are those of the author and are not necessarily shared by the CNAA.

STANDARDS

Feedback should, however, improve individual courses and we are therefore left with a revised task - to ensure that the standards of courses are maintained and improved. Notice that the focus is now on the educational experience offered on the course, rather than only on the awards conferred - that is not to ignore the level of the final assessment but to link it to the aims of the course rather than to see it in absolute terms. This shift is consistent with the Council's charter, rather than the derived statutes, the Council's object being the advancement in the UK of education, learning, knowledge and the arts by means of the grant of academic awards for pursuit of approved courses of study. Before discussing the quality control system used by the CNAA, we must explore the problematic notion of 'standard'. Perhaps it relates to the increments of knowledge, skills and experience gained by students over three full-time years (for a first degree). There are two problems here -firstly it requires measurement of the standard of the students at the beginning and end of the course, and secondly the divorce from the entry standard as one determinant cannot be sustained.

Three years of full-time study beyond BA level would clearly produce a course of very different standard from one of three years based on GCE 'O' level - although with mature students in both cases differences might not be so great as between groups of 21-year-olds and 16-year-olds. The argument that standard means 'demand' (intellectual or imaginative) on the student leads to the unacceptable position that a course consisting entirely of 'O' level material, if it were new to the students, could justify a postgraduate award. The escape here for postgraduate courses of a 'conversion' kind is by referring to the pace and approach of the learning - ie that learning can be made 'stretching' irrespective of the content. This discussion has, at least, drawn out the importance of teaching and learning approaches to the standard of a course.

The other problem in the incremental definition of standard is that it leads to the diffuse issue of measurement of student abilities. Even if we accept that achievement rather than ability is all which can be measured, the question remains: achievement of what? The temptation is to talk of 'high ability' students or perhaps of 'high achievers' as those meriting a good Honours degree, and then requiring an assessment system to detect the high and low achievers. This is to assume that there is only a single dimension of ability (and achievement) - ie that a student is equally good or bad at various types of achievement. Ability, however, seems to be multidimensional, even if the controversial notion of a general ability is accepted. Therefore, in any simple measurement of student performance such as a degree classification, the aggregation of marks ignores the different types of achievement that are being added, and weightings which are arbitary, since they cannot be derived logically from the aims of the course unless these are ordered by priority. In looking for a definition of standard and of ability, we have been driven back to the aims of the course.

So let us try another definition: a course is of an acceptable standard if all students to whom its awards are granted achieve all of the course aims and if those aims are appropriate to the level of award. This is more satisfactory but still raises problems. No assessment system is likely to be completely valid (not to mention reliable), so that the means of testing mastery of the course aims is likely to pass some inadequate students and fail some adequate ones. Some course aims are difficult or impossible to operationalize in a way which relates to assessment - which raises the danger that such aims may unintentionally be ignored or not even articulated in the first place. Also, some course aims may be more important than others, so that in practice students may be granted awards who satisfy the major aims rather than all of them. Again, this causes a problem if the major aims are those difficult to articulate and operationalize, which often is the case at the degree level. Indeed, this whole approach to maintenance of standards has been criticized by Robin Alexander[5] in that it does not allow for unintended (but still beneficial) outcomes of courses and it assumes a consensus on aims is necessary. Some allowance must therefore be made in a definition of standards for the nature of the educational experience as well as the final level of achievement (as measured against the course aims) - again this is not inconsistent with the charter. But how much allowance, and what are the characteristics of a beneficial educational experience? A further problem with the definition is that it implies only criterion referenced assessment, and a norm referenced system is needed to generate degree classifications. Putting on one side the argument this makes for a 'profile' assessment scheme (with a transcript), the answer given by the CNAA is in terms of discrimination in relation to the extent to which its general educational criteria are met (at least, this is the rationale for the means of qualitatively distinguishing Honours and Ordinary degree awards given in the principles issued in 1979[6]) - this clearly begs the question of the existence of a cluster of general (transferable) abilities. A final problem is how to determine whether course aims are appropriate to the level of the award, .and there is a danger here of a circular definition or reversion to the incremental definition. The device used by the CNAA is, again, its statement of general education criteria, which course aims must incorporate.

COURSE AIMS

One distinguishing feature of the CNAA system of quality control is, therefore, the importance attached to all first degree courses and students satisfying the following statement of the balance and aims of a programme of studies (Principle 3)[6]:

> '3.1 A programme of studies leading to an award of the Council will seek to achieve one or more specific objectives which will determine, to a greater extent, its form and content. The Council has found a wide range of specific objectives appropriate for programmes of studies leading to its awards and this range is continually be extended. Thus, some programmes will seek to prepare students for a particular profession or vocation; some will seek to develop a student's general problem-solving skills; some will seek to promote a student's artistic development; some will seek a breadth of subject coverage, while others will encourage specialisation and yet others will transcend traditional boundaries of knowledge. Whatever the specific objectives, a programme of studies must also satisfy certain general educational criteria which Council regards as crucial to the achievement of the standard of its awards. The

general educational criteria in 3.2 to 3.7 will normally be satisfied through the realisation of the specific objectives of a particular programme, and so the latter must be appropriate for the purpose.

3.2 A primary aim of any programme of studies must be the development of the student's intellectual and imaginative skills and powers. Not only increasing knowledge, but also increasing intellectual and imaginative development, must be presumed by the content of the programme and the way in which it is taught and by the course regulations which the student is required to satisfy.

3.3 The direction of the student's studies must be towards greater understanding and competence. Thus, while it may be appropriate for a programme to include the acquisition of techniques or skills, or the learning of data, these must lead to a higher level of intellectual and creative performance than that intrinsic in the learning of the skills, techniques or facts themselves.

3.4 A programme of studies must stimulate an enquiring, analytical and creative approach, encouraging independent judgement and critical self-awareness. It must be planned and taught so as to provide balance in content and presentation, allowing the student freedom to draw his or her own conclusions while encouraging the rigorous approach to data, demonstration and argument which will ensure that these conclusions are soundly based.

3.5 The programme of studies must encourage the skills of clear communication and logical argument, and the full and effective use of at least one official language of the United Kingdom must be fostered, in both its spoken and its written forms. Whenever appropriate, the student must be enabled to understand the relevance and use of mathematical modes of expression.

3.6 The student must also be encouraged to develop the ability to see relationships within what he or she has learned, and to relate what he or she has learned to actual situations.

3.7 The student must be encouraged to appreciate the nature of attitudes, modes of thought, practices and disciplines other than those of his or her main studies. He or she must learn to perceive his or her main studies in a broader perspective. As part of this process he or she must be enabled to develop an informed awareness of factors influencing the social and physical environment.'

This is nothing less than a view of what degree level education is about, irrespective of the subject. As such, it suffers with other statements of inexpressible and intangible concepts - that is implementation in course aims may fall short both in terms of the CNAA's monitoring during discussions of course proposals and appraisals, and in terms of student's actual achievements. The main difficulty with this statement is that the alternatives for its implementation seem to raise questions both about staff attitudes and assessment. The two approaches are to provide a complementary study as an adjunct to the main subjects of a course or to subsume within the teaching of the main subjects. The present tendency is towards the latter approach, and it is difficult for CNAA validating panels to get beyond an assertion that 'our discipline naturally fulfills these aims, as we teach it' (and the position in multidisciplinary or interdisciplinary degrees is, paradoxically, also problematic). This should lead to discussions of teaching and learning approaches, which run into the difficulty of the sensitivity surrounding the historic privacy of the classroom together with a request to respect the integrity of the staff; yet the establishment of just this level of confidence in the course team is a major object of the validation process and may well hinge on just such discussions of commitment to the aims of degree education (together with subject competence). There are ways through this by enquiring about professional activities, and development of staff to teach in the way proposed, by talking to students, and by looking at examination papers (but that naturally leads to wishing that the answers and marking schemes could also be seen).

EXPLICIT NATURE OF THE CNAA

I have pursued the issue of educational aims for its intrinsic importance and also to illustrate four further and crucial characteristics of the CNAA (and also incidentally of the Open University). It is an explicit, public, evolving and responsive system. Unlike a number of universities, the notion of a course means an explicit statement about a student's whole programme of studies. In some universities a 'course' may mean simply 12 (or so) lectures given by one member of staff, and the student's programme of studies may be defined only by the members of staff whose examinations have to be taken. Such an approach lacks the explicit statement of aims of the programme of studies, structure, content and assessment arrangements which is characteristic of a CNAA course; it also lacks the notion of a course team which is considered within the CNAA to be essential to course cohesion (this begs complex questions about coherence). The views, philosophy, aims, criteria and processes of the CNAA are themselves made explicit both in policy statements, regulations and procedures, and also in reports on course considerations which are made available to the course teams concerned.

PUBLIC DEBATE AND PUBLIC RECOGNITION

Clearly the CNAA regulations, procedures and policy statements are public and its annual reports make public data about its courses, student performance on them, and membership of its committees and subject boards. It is difficult to conceive that the awards of the Council would have achieved their public acceptance without this openness. That is not to say that CNAA courses have yet received complete parity of esteem (with university courses), for example amongst those who advise sixth formers. However, it is difficult to judge this, as the title of the institution may be more important than the awarding body in the choice of higher education, and parity would anyway not be expected where the aim is to attract students who otherwise are not adequately provided for. Esteem does seem to have been established amonst employers of graduates, judging from the work which has been done on sandwich courses. Students on the courses also seem to give higher evaluations of CNAA courses (especially in regard to structure of the course, assessment procedures, and relevance to future careers) than of university degree courses in the same polytechnics, and the staff see more advantages, according to Whitburn, Mealing and Cox.[7]

COURSE TEAM AND SUBJECT BOARD INTERACTION

There are important sub-sets of the public which have a more intimate knowledge of the courses and their successes and failures. One of these is the course team itself, the existence of which should ensure that the approach to the subject is debated outside the classroom and that an agreement about aims, structure and content of the course is reached through consensus and then enjoys the commitment of staff. Another 'public' is the institution mounting the course, to whose academic board the course team and examination board are accountable in regard to the maintenance of standards. The responsibility of the academic board in respect of the course is exercised through monitoring and review processes, whereby information about the performance of the course is shared within the institution. A third 'public' is the peer group within the subject, as represented by the CNAA subject board. It is this body which considers the acceptability of the course when it is proposed and later when its operation is reviewed, on each occasion through discussions with the course team and on later occasions through discussions with students too. It is not for the subject board to question the need for the course - which is assumed to have been established to the satisfaction of the institution and the funding and controlling bodies - and the board will usually start its consideration from the course aims as stated, in order to satisfy itself, firstly that if met they will merit the level of award proposed, secondly that they can be met with the structure and content proposed, with the available staff and resources and with the intended students, and thirdly that there is an adequate means of assessing whether they are met by individual students.

ACCOUNTABILITY AND INSTITUTIONAL REVIEWS

A fourth 'public' is the main committee and Council itself, to which the subject board is accountable in regard to mediating the Council's responsibility for standards to the course team. Council and its main committees also relate to the institutions as a whole through the means of regular institutional review visits. Each institution has to be approved by the Council as suitable to offer any CNAA course before a course may be approved, and institutions have to remain in approval in this way so that CNAA courses may continue to be offered. The need for such institutional reviews does not emerge directly from the Council's charter and statutes, but can be derived from the assumption of a system of accountability for the setting and maintenance of standards within the institution, and from the need for corporate decisions on resource allocations. In practice, institutional reviews have gone beyond judgements on the effectiveness of the processes of course control and resource deployment into other aspects of the environment in which study takes place. While this is consistent with a concern with the educational experience, it can be argued that libraries, computers, student counselling services, the level of administrative support, and lively scholarly activity amongst outward looking staff do relate to this experience, whereas student union facilities, residential accommodation, staff promotion procedures and the details of the academic and administrative structure are at best of peripheral relevance. The scope of institutional visits is therefore problematic, and the issue is further confused by the approval of associated institutions on the one hand and of distant learning (in principle) on the other (albeit for mature students only).

EVOLUTION

The explicit and public natures of the CNAA system have so far been presented without criticism. However, they have their dangers. Explicit documentation may divert attention away from the quality of the staff, in whom is to be reposed the operation of the course and the solution of problems as they arise. Explicit statements may easily become fossilized statements long after they have fulfilled their purpose of clarifying intentions and implementation in the minds of staff and of subject board members. In fact, the CNAA has always assumed that a course must evolve in the light of experience and of the development of the subject and of the staff. Thus syllabuses and booklists are to be interpreted in this fluid way, while significant modifications can be readily agreed with the Council during a period of approval, and an evolution of thinking about the course will be expected at the regular five-yearly review visit, which is another characteristic part of the system. So too do the Council's own statements evolve through the policy formulation machinery, in response to creative tensions present within its organization and between it and institutions - just as courses evolve in response to creative tensions, emerging from the course design and within the course team. However, evolution also causes problems, in that the CNAA has to keep track of course modifications which in the case of a large complex scheme may be frequent and may accumulate to create a drift of philosophy; the institutions have to keep track of numerous Council documents, and overall the present system generates much paperwork.

CREDIBLE CRITICISM

The public nature of the processes can make it difficult to be as critical in the comments made about an institution, its staff or its courses as the circumstances warrant. It can also lead to very formalized exchanges between course teams and subject boards, based on a defence of already stated positions rather than an open exchange based on the frank recognition of strengths and weaknesses. The requirement to present a critical analysis of the course operation is intended to encourage such critical awareness, but it is likely that insufficient thought has yet been given to the whole question of course evaluation. Public debate can also lead to the over-definition of aspects of a course which would be better left with greater freedom to evolve. Within an institution, the sharing of information about a course can lead to great sensitivity about problems and a reluctance to change that which seems successful. In such situations, the opinions of 'laymen' are not likely to be well received by the subject experts running the course. Consideration of the course by a peer group from the subject board also has potential problems when the composition of the group lacks continuity from one review to another, when strongly stated points of view lead to suggestions that the composition affects the outcome, when the professional body appears to be speaking very conservatively through some members or when the membership on a particular occasion is not strong enough in credibility fully to justify making a particular decision, or when board actions on similar issues lack apparent consistency. Whether composition of a validating group affects the outcome cannot be tested, although I found that comments made independently by six groups upon one fictional submission did not differ greatly in their major features.

RELATIONSHIP WITH INSTITUTIONS

Finally, in connection with evolution, I want to turn to innovation. The policies of the CNAA evolve, as could be shown by tracing statements about Honours/Ordinary degrees or about general educational aims. A clear example which has led to innovation concerns the relationship with institutions. A debate on greater freedoms for institutions led first to the 1973 Procedure for Validation paper[8], which allowed for more flexible responses to renewal of approval, but was not completed there, and indeed had a number of aspects that proved difficult to implement. Further discussion led to more radical ideas expressed in the 1975 Partnership in Validation discussion document[9], which proposed to authorize institutions to act through internal procedures on course proposals in specified subject areas. This proposal contained built-in conflicts between the freedom of institutions and the safeguards needed by the CNAA. Although the aims of the paper were accepted, comments received on it[10] from within and without the CNAA organization overwhelmingly rejected it for one or other of two contradictory reasons - either it went too far or it did not go far enough. However, there was general agreement about the usefulness of subject boards and this was made the starting point for the further discussions which led to the 1979 Developments in Partnership in Validation provisions[11] - an interim proposal having been rejected by the Council in 1977. Had not the Council been responsive to considerable external criticism during 1978, it may be that it would not have adopted the present document, which still contains the same tensions as the earlier proposal. However, the arrangements adopted in 1979 are more evolutionary in kind although they do have the flexibility to evolve further in several ways which would lead to innovation - considerable reliance upon an institution's internal processes for the setting and maintenance of standards, or the consideration of groups of courses at the same time. Both of these developments would focus more attention on the corporate nature of an institution and the Council's reviews of the institution as a whole. The debate has not finished, and various accreditation models are currently being considered.

RESPONSE TO INNOVATION

This illustration shows some of the strengths and weaknesses of the CNAA system. The Council is a responsive body rather than a deliberately innovative one. However, a less responsive position may well lead to prescription, and central design and direction. It is a characteristic of the CNAA that, unlike some validating bodies, it has avoided this; even the rather detailed new first degree Regulations are subservient to a set of broad principles[6]. Because its debates are often public, it is sometimes external stimuli which cause evolution rather than any internal sense of direction. This is a more dynamic system than conservatism which is able to escape the public gaze. Nevertheless, there are circumstances in which innovations are made difficult by the public nature of the Council's work, for example in relation to possible open learning systems. The CNAA does take initiatives, for example launching the DipHE, agreeing with the Open University over credit, and post-experience courses. Often its treatment of innovations proposed by institutions is more conservative, for example the prolonged discussion of the Degree by Independent Study and the tight controls surrounding it, the guidance about assessment arrangements, the refusal to recognize a course structure framework in advance of the course proposals, and the reticence about recognizing preliminary courses as alternative entry routes. The image of the CNAA as reflected in its practice therefore does not always match its claim[8] that it 'wishes to encourage the growth of new ideas in the Colleges and the subsequent incorporation of these in applications to the Council for the approval of new courses of study' and that it 'does not wish to do anything which might, or might appear,to, inhibit or discourage colleges from being adventurous and innovatory.' This is a natural consequence of the membership of the CNAA organization, which is not selected to be particularly sensitive to innovation or to the promotion of initiatives, but to be a peer group with academic credibility in discipline terms. A further problem in responding to proposals, rather than initiating them, is the possibility of approval by 'attrition' - an institution may continue to modify its proposal until it is accepted, perhaps with a marginal level of confidence in staff, owing to the amount of guidance given by a subject board.

Reluctance in taking initiatives also applies to the political aspects of higher education, where the CNAA has not exerted the full influence permitted within its charter.

The impression given to course teams can often be that a proposal is 'guilty until proved innocent', and this can have a discouraging affect in relation to innovation lest the course team gains a poor reputation within the institution for its lack of success with the CNAA. This is an unfortunate situation, in that the CNAA does not have a monopoly of wisdom yet its monopoly of decision-making power can cause college staff to defer to its judgement, or to adopt defensive positions or cynical views. The recently introduced validation arrangements[11] can be seen as an attempt to make decision taking emerge from a consensus between course team and subject board rather than just within the latter, and where the CNAA recognizes its limitations in regard to wisdom. This would be a step forward.

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7 Institutional Performance INDICATORS IN TIMES OF FINANCIAL STRINGENCY, CONTRACTION AND CHANGING NEEDS*

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Today, institutional performance assessment has to be undertaken against the background of the long-term trends identified in the DES documents Higher Education in the 1990s (1978) and Future Trends in Higher Education (1979), the pressure to charge overseas students full economic fees, the letters of guidance from the UGC, and the severe short-term pressures to reduce the level of government expenditure on higher education. Within institutions there is a need to balance the pressure for increased cost efficiency and possible restrictions on student admissions in the short term with the actions that need to be taken if the organization is to be effective in the long term. One of the greatest dangers in the present situation is that the short-term pressures will become so overwhelming that many actions will be taken which will be damaging to the long-term effectiveness and efficiency of institutions.

What do we understand by the term 'effectiveness', and should a distinction be drawn between effectiveness and efficiency? Is an organization effective if it achieves the objectives it has set itself, and should those objectives be appropriate to the needs of society? Is it efficient if it achieves those objectives with optimal use of the resources available to it in the long run? What is the relationship between effectiveness, efficiency and performance assessment? Is institutional performance assessment concerned with the measurement or observation of the effective and efficient accomplishment of the expectations of the institution's constituencies (Romney, Bogen and Micek 1979)? Is it an examination of the objective achievement process, which consists of at least four distinct stages in which objectives are set, resources are committed for the purpose of achieving these objectives, committed resources are expended to achieve the objectives, and outcomes result (Romney, Gray and Weldon 1978)? If it is, should we view indicators of performance in this context? Is the setting of long-term objectives for institutions the most critical stage at the present time?

Effectiveness and efficiency are elusive concepts in higher education, and the process of institutional performance assessment carries with it potential liabilities which warrant careful consideration. Drawing upon their extensive experience with NCHEMS, Romney, Bogen and Micek (1979) have categorized the liabilities and disadvantages associated with the process and outcomes of institutional performance assessment under four headings: political liabilities, methodological cautions, economic concerns, and philosophical caveats.

OBJECTIVES

Non-profit making organizations, such as institutions of higher education, exist to provide a service. Not only are services more difficult to measure than profits, so also is the process of identifying, quantifying and agreeing an overriding objective in such organizations; developing a hierarchy of primary and secondary objectives that flow from this overriding objective; and subsequently measuring and comparing actual performance against these objectives. These difficulties, which are central to the process of performance assessment, are particularly acute in institutions of higher education.

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* The complete version of this paper may be obtained from the author.

Is an institution of higher education effective if it achieves objectives which are appropriate to the economic, socio-political, technological, ecological, and educational environment in which it operates? Should its objectives be congruent with the long-term needs of society? Many of those involved in the management of institutions would probably answer such a question positively. However, would they be able to reach agreement on the long-term needs of society, the contribution their institution should make to satisfy those needs, and the objectives for their institution?

Has the time now arrived for setting and obtaining agreement upon objectives. A study of measures of institutional goal achievement, conducted in 1976 by Romney (1978) for the National Center for Higher Education Management Systems, is relevant to this question. Romney undertook a survey of 1150 persons - faculty, administrators and trustees at 45 American colleges and universities of six different types - which surprisingly indicated that faculty, administrators and trustees largely agree on what their institution's goals should be. Respondents were asked to rate with respect to appropriateness for their institution twenty broadly stated institutional goal areas. Goal preference generally varied across institutional types, but there was a large degree of agreement within them among trustees, faculty and administrators.

However, even if agreement can be reached on the broad objectives for an institution, can these be translated into agreed quantifiable goals and desired performance indicators? What weighting should be given to the different objectives, and how should conflict between objectives be resolved? If it cannot, how can more detailed objectives and performance indicators be established to measure effectiveness and efficiency for the component parts of the institution? In some academic departments, particularly multi-discipline departments, is it unlikely that agreement can be reached amongst members as to what the objectives are for the department, for the courses offered by the department, and for the research programmes undertaken within departments? Therefore, where do members of academic departments, heads of academic departments, and deans fit into the spectrum ranging from goal conflict to striving towards goal congruence within institutions of higher education? Does today's environment encourage goal congruence or goal conflict within institutions?

'PARTIAL' PERFORMANCE INDICATORS

Given the complexities and difficulties surrounding the objective setting and planning process, it is not surprising that there is a tendency to recognize those parts of the system that can be measured and monitored with a considerable degree of precision. While it may not prove possible to agree objectives, measure outcomes and develop performance indicators for an institution as a whole, it often proves possible to do so for parts of the organization: ie to develop performance indicators that relate physical and monetary inputs to physical and monetary outputs and outcomes, and to build these into the planning and reporting system. However, do those who develop and employ such partial performance indicators always remember that optimizing the parts does not necessarily optimize the whole?

Sorenson and Grove (1977) have summarized the objectives and properties of various service performance indicators: availability, awareness, accessibility, extensiveness, appropriateness, efficiency, effectiveness, outcomes/benefits/impacts, and acceptability. From these, the author has developed partial performance indicators for institutions of higher education (Figure 7.1) (Sizer 1979a). Many of these partial performance indicators are traditional process measures of institutional performance, such as staff-student ratios and cost per FTE, rather than outcome measures or ones that substantiate progress towards achieving objectives. As might be expected, traditional process measures of institutional performance were rejected by almost all categories of respondent in the Romney (1978) study. Objective measures pertaining to impacts of higher education such as satisfaction were preferred, and ability to apply knowledge, publications, and value added.

If an effective institution of higher education is one which achieves objectives which are appropriate to the economic, socio-political, technological, ecological and educational environment in which it operates, then should not its effectiveness be measured in terms of the outcomes/benefits/impacts of its teaching and research programmes on society?

The difficulties involved in developing such measures, and incorporating them into management information systems, should not be underestimated. Is it likely that highly sophisticated research designs will be required, which not only will prove expensive but involve a degree of complexity which may be regarded as impractical, probably rightly so, by administrators? Balderston (1974) has observed that the data base is not available, nor are the techniques for segregating the specific impact of one university from the other forces at work.

Nevertheless, it may well be that the time is right to assess the quality of institutions, and the social value of different disciplines.

It is not surprising that to date we have tended to fall back on to quantitatively based process measures even though we know these are inadequate where institutional effectiveness is concerned, though many (such as staff-student ratios, and cost per FTE) are relevant to decisions regarding internal planning, and control and resource allocation, and to assessing efficiency as opposed to effectiveness. As Delany (1978) has pointed out, the function of control '... does not cover other aspects of the problem of policy making which deal with the quality of outputs.' It is concerned with the relationship between expected and actual inputs, and expected and actual outputs. Romney (1978) considers that the heavily numerical, efficiency-based accountability perspective is inappropriate to higher education, and that institutions should concentrate, for the purposes of assessing institutional effectiveness, upon the development of measures that substantiate progress towards achievement in those few goal areas that constituencies consider appropriate. There is a strong case at present for developing progress measures of performance in addition to process measures and measures of outcomes/benefits/impacts.

Despite the numerous hurdles that will have to be surmounted, I do believe that a concerted effort must be made to develop and obtain agreement within institutions on their academic policy and objectives for the 1980s and into the 1990s. The DES discussion document, Higher Education into the 1990s, examines future demand for higher education by projection of student numbers under certain assumptions, and its Future Trends document revises these projections downwards. Neither document fully considers the demand for outputs from the educational system. It has been argued that to be effective an institution of higher education must be responsive to the long-term needs of society. Inevitably it will be argued that we are not very good at forecasting the future needs of society, but surely it is

Figure 7.1 Properties of performance indicators in higher education

FOCUS OF MEASURE	CONCEPTUAL CONTENT	TELLS	EXAMPLES
AVAILABILITY	Amount and type of course, research facility, or central service provided	What can be obtained	List of services available in Careers Advisory Service; list of research facilities and opportunities available in academic department; number, capacities, and locations of lecture and seminar rooms
AWARENESS	Knowledge of user population of existence; range and conditions for entry or use of courses, research facilities, or central services	Who knows about what is available	Knowledge of prospective students of courses offered by an academic department; knowledge by prospective users of services provided by central computer centre
ACCESSIBILITY	Indicates if services can be obtained by appropriate groups	Ease of reaching and using facility	Availability of photocopying facilities, location of car parks, average waiting time for literature search by library information service; opening hours of medical centre
EXTENSIVENESS	Compares quantity of services rendered with capacity available and/or potential demand	'How much' but not 'How well'	Students enrolled on courses compared with course quotas; number of users of library; clients in medical centre; percentage of final year students using careers advisory service; % utilization of lecture and seminar rooms
APPROPRIATENESS	Correct type and amount of service rendered, course offered, or research undertaken	Is quantity and/or quality of facility offered that required?	Demand for courses: number and quality of applicants; mis-match between computing facilities required and available; comparison of class sizes with lecture and seminar room capacities
EFFICIENCY	Compares resource inputs with outputs	How much resource was used, such as: - how much did it cost per unit - how much did it cost in total - how much time did it take - what grade of employee was used	Cost per client service in medical centre; cost per FTE student by course; cost per literature search; cost per meal served

EFFECTIVENESS	Compares accomplishment with objectives (or what was intended) - qualitative - comparative	Characteristics Duration Content Effect Proportions served Variances from budgets, standards	Comparison of planned with actual: % utilization of lecture and seminar rooms; number of students graduating; number of graduates employed; ratio of actual to planned utilization of computer; comparison of budgeted cost of central service with actual cost; comparison of actual with planned cost per FTE for course; comparison of planned with actual course content; actual compared with planned wastage rate
OUTCOMES/ BENEFITS/ IMPACTS	Identifies social or economic benefit	Monetary effects Non-monetary effects	Increase in earnings arising from attendance at/ graduating from course; benefits to society of successful research into previously incurable disease; benefits to local community of cultural programme; patents and copyrights registered
ACCEPTABILITY	Assess match of service/course/ research outcomes with user/ participant preferences	User satisfaction with services; student satisfaction with courses; client satisfaction with outcome of sponsored research	Demand for courses; number of complaints to librarian; course evaluation at end of lecture programme; repeat sponsoring of research

better to attempt to identify and satisfy them than to assume in a rapidly changing society that today's needs (frequently measured in terms of applications from school leavers) are the best indicators we have of future needs?

Thus, not only will the system face falling total demand, but also changing demands. Is it important that institutions should recognize this and plan not only for declining numbers, but also for resource mobility, research in anticipation of new course demands and research and consultancy opportunities? Should we therefore assess the performance of an institution in terms of its responsiveness to these changing needs of society and develop performance indicators that will measure an institution's progress in responding to these changing needs?

TESTS OF APPROPRIATENESS

Given that higher education abounds with joint inputs and multiple outputs and outcomes, and the ultimate impact of many of the outcomes is long term and extremely difficult to measure, what tests should be applied to various possible indicators to determine whether they are appropriate for the purpose intended? The standards of relevance, verifiability, freedom from bias, quantifiability and economic feasibility have been proposed (Sizer 1979a, c) recognizing that trade-offs frequently have to be made between standards. Some of the questions that arise are:

- Who determines 'relevance'?
- Do we always recognize that a performance indicator may be relevant for the purpose for which it was developed, but not relevant when used for other purposes?
- Should the performance indicator be free from both statistical and personal bias?
- How important is the standard of quantifiability to performance indicators in higher education?
- How can a proper balance be struck between qualitative and quantitative aspects? As we have seen this is a particularly relevant question at the present time.
- If the external financing bodies continue to emphasize indicators of process, rather than progress, effectiveness and efficiency when assessing institutions, will administrators and faculty begin, or continue, to function in accordance with incentive structures which are not consistent with an institution's goals and objectives.

Douglas Porter (1978) has proposed that a further test, institutional acceptability, be added to the five standards, and argues:

> 'The measures of performance adopted may not themselves be the most reliable indicators of effectiveness or even efficiency but they could be justified if they lead to improved performance or decision taking even though they themselves may not be thoroughly sound intellectually. What is vital is that the people using the indicators should accept them, and the basis on which they are devised, as relevant and fair.'

Is Romney (1978) right to argue, like Porter, that consensus building techniques can facilitate the selection of appropriate goals and measures within institutions? Will such approaches result in economy of information by concentrating on developing performance indicators for the few highly appropriate goal areas for which a consensus exists, rather than trying to document progress in every goal area that has been accorded some degree of appropriateness? On the other hand, should we recognize that such consensus building might be more easily achieved when resources are relatively abundant than when they are relatively scarce? Can one manage change and achieve resource mobility during a period when institutions are likely to be more concerned with coping with the pressures of revised student numbers and lower provision per FTE? In other words, will the senior academics and administrators, the managers of change, in institutions of higher education be so concerned with today's problems that they will not give adequate consideration, and make appropriate plans, to cope with tomorrow's problems, particularly when many of these managers of change may have retired before the 1990s?

Furthermore, significant changes have taken place in the status and attitudes of lecturers. They will face higher teaching loads at a time when their career opportunities have diminished significantly. Not only will they have less time for research, but, if there are few promotional prospects, they may well not be motivated to undertake research of the type needed to cope with the predicted dynamic changes in society (assuming research grants are available), and the union that represents them may not accept, though it may recognize, the need for resource mobility and for lecturers' own retraining and redeployment.

> 'The real danger of contraction, however, is that individuals who by nature desire excellence will begin to settle for mediocrity out of frustration.'
>
> (Richard Cyert 1978)

It has been argued elsewhere (Sizer 1979b, c) that there is a need to appoint high quality 'managers of change' who can overcome institutional inertia when the opportunities arise. These managers should not only be able to plan and control efficiently the allocation of resources to see their institutions through the short-term 'hump' and financial squeeze, but also be able to motivate people to recognize the need for long-term change, and secure their participation in its planning during the period of the 'hump' and its implementation during the subsequent contraction.

CONCLUSIONS

The changing needs of society, particularly during periods of contraction and under conditions of financial stringency, necessarily involve the development of a strategy for resource mobility. During such periods high quality managers of change, of appropriate academic standing, should be motivating their institutions to strive to become effective in the long term through attempts:

- to evaluate the institution's current subject area portfolio and critical resources;
- to examine systematically the future environment in which it will be operating and to identify threats and opportunities;
- to understand and communicate the implications of this future environment to institutions' constituencies;
- to agree through consensus building techniques the goals and objectives for the institution and its constituent parts, and the measures for monitoring progress towards achieving these goals and objectives;
- to develop a) a set of alternative long-term strategies and operating plans including a strategy for long-term resource mobility; b) a strategy for short-term financial emergencies; and c) the short-term planning and control systems based on measurable information and performance indicators, backed up by a nationally organized scheme for inter-institutional comparisons.

The greatest challenge to the managers of change is to create an environment in which members of faculty and administration, heads of departments and senior academics and administrators, and the hierarchy of committees strive to achieve goal congruence between their objectives and actions and the long-term objectives and strategies of the institution. The performance indicators developed and employed should be consistent with these objectives and strategies. However, people not performance indicators make and implement decisions. No matter how appropriate and relevant the performance indicators, they will only be effective if the decision makers' responses and actions are positive. The 'managers of change' have to create an environment which will lead to positive responses - which is easier said than done under conditions of financial stringency and possible contraction.

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8 Institutional Performance
RELATIVE PERFORMANCE

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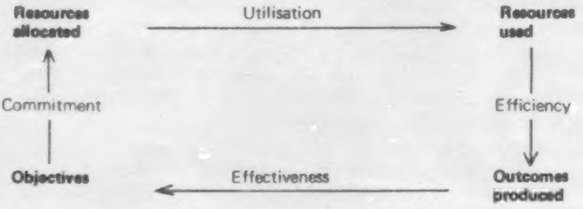
WHAT IS PERFORMANCE?

John Sizer (1979) concluded by calling for the development of a strategy for resource mobility and for the development, amongst other things, of short-term planning and control systems based on measurable information and performance indicators backed up by a nationally organized scheme for inter-institutional comparisons. But what is 'performance'? Romney, Gray and Weldon (1978) attempted to define institutional performance as a four-part construct. They suggest splitting performance into 'commitment': ie the match between objectives and resources allocated to various activities: 'utilization', the relationship between resources allocated and resources actually used; 'efficiency', the relationship between resources used and outcomes produced; and finally 'effectiveness', the relationship between outcomes produced and the objectives which led to those outcomes. Now institutions may or may not have coherent objectives; they may budget for certain levels of resource use but what they certainly do is consume certain amounts of resources and produce certain measurable outcomes. Short-term planning and control must therefore concentrate on the concept of 'efficiency' (Figure 8.1).

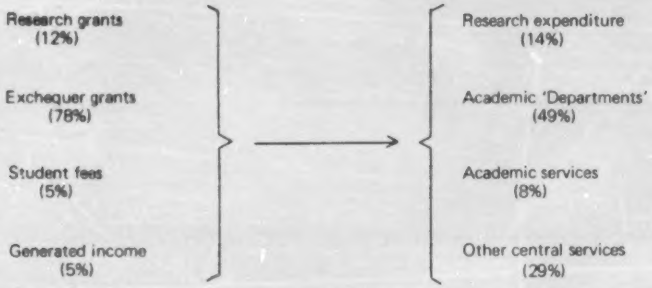
Figure 8.1 What is performance?



WHICH RESOURCES?

The UGC provides annually, for universities, some limited information on resource use and the outcomes of UK universities. The Polytechnic Finance Officer's Group has tried to produce similar or better (?) information for the public sector of higher education. Whilst these data allow crude comparisons to be made they also indicate the lack of resource mobility. Figure 8.2 shows the income and expenditure pattern for all UK universities for the academic year 1974-75. It should be noted that most universities differed only slightly from these overall figures.

Figure 8.2 University income and expenditure 1974-75



On the income side, the total available for research grants has been cut slightly by the government, the direct grant has been cut, leaving overseas students to make it up again, and the home student fees are paid by local authorities out of their government grant. Thus since total student numbers have been restricted to the target population for 1979-80 there is no way that any institution can change its income other than by generating more income from short courses and consultancy and by increasing its own share of the smaller amount of research funds available.

On the expenditure side, research expenditure reflects research income; academic departmental expenditure is mostly salaries; academic services include library, computers and museums and so also involve salaries; and other central services are about 50 per cent salaries (mainly for maintenance, cleaning and catering staff). Since these headings take a fairly standard proportion of total expenditure it seems that institutions can cut their expenditure only by squeezing each of these areas. This can be done by freezing vacancies, delaying maintenance, and cutting heating, lighting and telephone bills and the like.

The important thing then is what happens as a result of these expenditures. Do the outcomes justify the current levels of expenditure and what would happen to them if expenditure were cut?

WHICH OUTCOMES?

The major activities of a university or polytechnic can be broadly categorized as teaching, research or service to the communities and it is the outcomes of these activities that have to be measured in some way.

Various attempts have been made (eg Birch, Calvert and Sizer 1977) to try and relate one resource (total departmental expenditure) to one outcome (student places) and calculate a unit cost, but this necessarily involves the allocation of all or part of that resource to the one activity under consideration, namely teaching. Research, so academics have said, occupies 24 per cent of their allocatable time (CVPC 1967) so a proportion of their salaries could be allocated using this average figure. Research brings publication, so a proportion could be allocated using this as a measure of productivity (Calvert 1978).

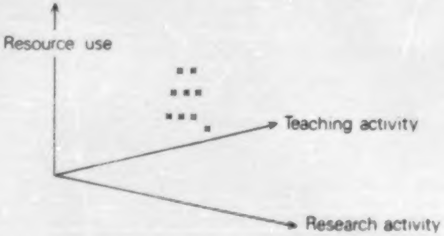
Any approach based on indicators depends on relating one resource to one outcome and as Burnip, Durrands and Linsell (1979) point out this can ignore the impact on cost of research, development and space utilization amongst other things. Efficiency has been defined earlier in this paper as the relationship between all the resources used and all the outcomes produced; thus what is needed is an approach to performance measurement which looks at all the resources and all the outcomes simultaneously. This requires a multi-dimensional version of efficiency rather than a set of ratios. One approach is to use geometrical ideas.

A GEOMETRICAL APPROACH TO EFFICIENCY

First consider one resource, say finance, and two activities - teaching and research. If several institutions are to be compared then unit costs can be calculated by allocating the resources between the two activities in some way or the level of resource use and the levels of teaching and research activity can be described in a geometrical way as follows.

The three levels for each institution can be plotted in three dimensions and produce a point to represent each institution. The result would be a group of points as in Figure 8.3

Figure 8.3 Geometrical approaches to efficiency



In this group some points will be on the edge and some in the main body. Now if resource use is to be as low as possible and teaching and research activity to be as high as possible then some of the points on the edge of the group arguably represent technically more efficient institutions than those in the interior. Hence an empirically defined set of 'more efficient' institutions can be identified and the boundary that they determine can be used as a reference for the others as well as an indication of the trade-offs available between activities at the level of activity of a particular institution (not the average trade-offs for the whole set of institutions).

If there are constant returns* to scale (ie not fixed costs and all costs are variable and linear) then the average trade-offs will suffice, but if as seems more likely there are increasing returns to scale up to some level of activity and decreasing returns to scale thereafter then it is important to look not at the average institution but at the more efficient institutions operating at similar levels of activity: ie at the 'efficient frontier' nearest to any particular institution. The concept of this 'frontier' defined by the most efficient institutions will be employed in the interpretation of the data which follows.

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* The term refers to the return of outputs from inputs; the returns to scale are constant if the outputs increase in direct proportion to the inputs; increasing (decreasing) returns apply when the outputs are more (less) than expected from such a directly proportional scaling up.

EXAMPLE

The published information for UK universities for 1974-75 only allows one measure of teaching activity, namely the students 'processed', and one measure of research activity, namely the amount spent on research. But if these crude measures of outcomes are used in conjunction with measures of resource use it is possible to examine teaching performance and research performance without having to make an arbitrary allocation of resources between the two. The published figures could be analysed by assuming constant returns to scale and dividing the measure of teaching and the measure of research by the expenditure to get two ratios for each university. However if there are not constant returns to scale the three measures just have to be left separate but can be analysed by using them to define points in three dimensional space as suggested in the previous section. In the absence of a three dimensional model the situation can be examined by looking at two dimensions at a time, particularly with respect to the idea of returns to scale. Figures 8.4, 8.5 and 8.6 show the results of such an approach. The data exludes the London Business School and the Manchester Business School, and the points for the University of London are off the scale.

Figure 8.4 shows the match between research and teaching as measured by research expenditure and student numbers whilst ignoring the departmental expenditure which produces the teaching and research activity required. However, if the institutions are grouped into similar levels of departmental expenditure they do form consistent groups. In these groups which institutions are more efficient? Are there returns to scale? To indicate the answers Figure 8.5 and 8.6 are needed as well.

Figure 8.5 shows the match between research activity and departmental expenditure. It seems to show that there are increasing returns to scale 'at the frontier' up to an academic expenditure level of $2\frac{1}{2}$ million then diminishing returns after that. This in turn suggests that a cut in departmental expenditure is likely in the long run to lead to a proportionally larger cut in financed research activity for the larger institutions.

Figure 8.6 shows the match between student places provided by institutions and the level of departmental expenditure on amongst other things the teaching pattern required. As one might expect, there seems to be a linear relationship 'at the frontier' which reflects a national formula for funding approach and at the institutional level an allocation of resources based on student load. It implies of course that cuts in resources must lead to proportionate cuts in student numbers. In other words institutions seem to be rather inflexible in the financing of their teaching activity.

COMMENTS

The example using just three measures leads to a roughly triangular boundary as defined by the more efficient institutions. This boundary shows constant returns to scale when relating students to departmental expenditure but increasing returns

Figure 8.4 Research versus teaching activity

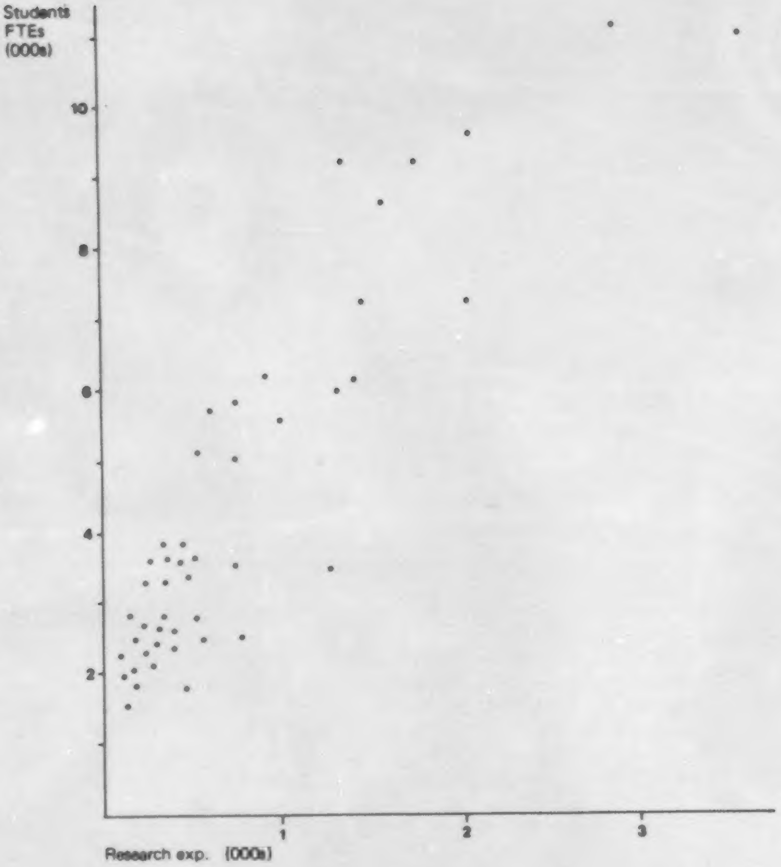
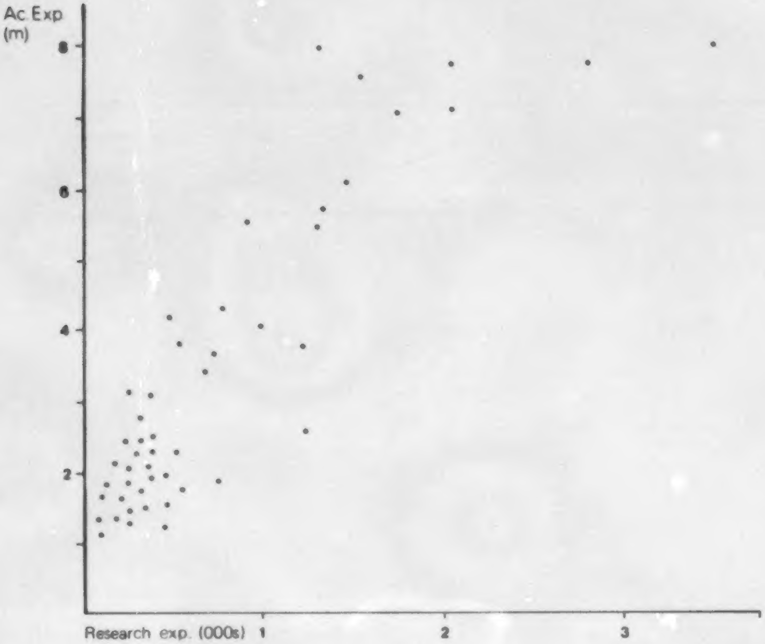


Figure 8.5 Research versus departmental expenditure

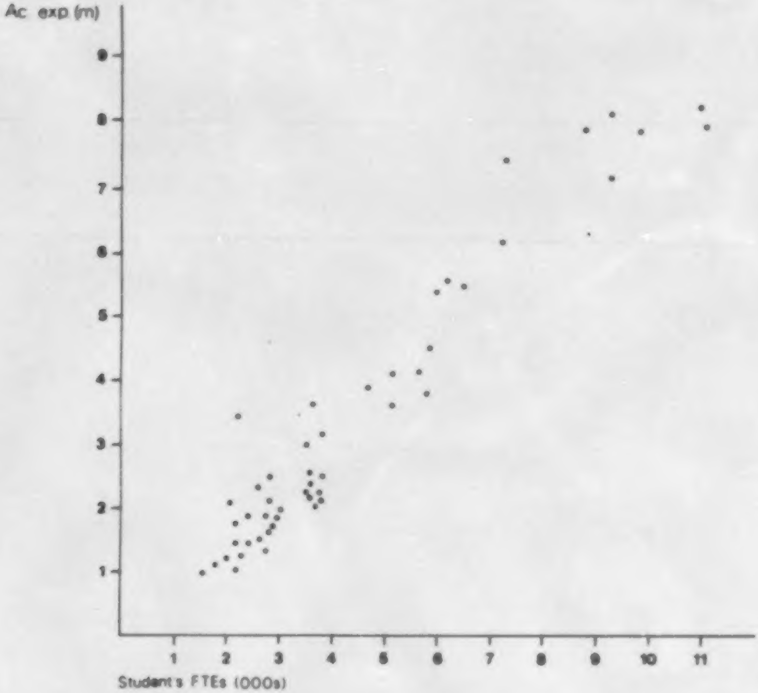


to scale for small institutions and decreasing returns to scale for large institutions when relating research expenditure to departmental expenditure.

The results of such considerations should be treated with caution. But the boundary can obviously be used to examine the effects of cuts in expenditure and in particular to examine how such cuts can be absorbed by increasing technical efficiency and how much they lead to reduction in teaching and research activity. The analysis will produce discerning questions which need to be answered. For example two institutions have a similar level of departmental expenditure but one produces only just over half the teaching and research activity of the other as measured above. This may well be perfectly justifiable but it needs justifying!

If other outcomes are considered and other inputs then the geometrical approach has to be carried out mathematically using such techniques as linear programming (Calvert 1978).

Figure 8.6 Student numbers versus departmental expenditure



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NOTE

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9 Institutional Performance INDICATORS IN POLYTECHNICS

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'When you can measure what you are speaking of and express it in numbers you know that on which you are discoursing. But when you cannot measure it and express it in numbers your knowledge is of a very meagre and unsatisfactory kind.'
Lord Kelvin

INTRODUCTION

Unit costing has been hailed as an indicator of the ability of higher education institutions to use their resources efficiently. There have been a number of studies both here and abroad, in the last decade, which have sought to compare the unit costs of different higher education institutions. It has been shown, for example, that average unit costs per equivalent undergraduate student at the Open University are a third of those at conventional universities (Wagner 1977). A comparison of the unit costs of a multi-site and a single campus university in Paris (Bourliaud et al 1978) has revealed not so much that one is cheaper to operate than the other but that the balance of expenditures differs. Other researchers have concentrated not on overall unit costs, but on the calculation and comparison of units costs for a specific activity. For example, a comparison of unit costs for the teaching function at a polytechnic and a technological university (Birch et al 1977) has demonstrated a marked difference in the average teaching costs of the two institutions.

Whilst these studies have concentrated on different aspects of the same activity, namely the use of unit costs as a tool of comparison or performance indicator, there is a common recognition of the dangers involved in this practice if due regard is not paid to the many factors which generate unit costs, some of which factors may affect some institutions more than others. The usual assumption is that the lower the unit cost, the greater the efficiency. This assumption is based on the initial premise that costs are comparable and, therefore, either ignores or fails to take full account of the existence of other factors which may reveal the initial premise to be quite unfounded.

This paper therefore has three main objectives: firstly to consider how far unit costs can be used as performance indicators in inter-polytechnic comparisons of efficiency; secondly to highlight a number of factors which may indicate performance; and thirdly to suggest a method of describing or characterizing a polytechnic.

METHODOLOGY

Unit costs for the 30 polytechnics have been calculated (for the financial years 1973/74 to 1977/78 inclusive) using the expenditure figures contained in the Polytechnic Expenditure Statements produced annually by the Polytechnic Finance Officers Group (PFOG). However, actual expenditures for 1977/78 were not available at the time of processing our calculations and so the estimates of expenditure for that year have been used. The expenditure figures used were gross figures: ie with no allowance for income, except in the case of refectories and hostels. Academic year full-time equivalents (FTEs) have been calculated according to the formula of the Committee of Directors of Polytechnics (CDP) and have been converted to financial year FTEs by weighting the two academic years involved as 0.333 and 0.667 respectively, except in the case of the five ILEA polytechnics in which case the financial year corresponds to the academic year.

Since the FTE is the denominator in determining unit costs, the method used to convert student numbers to FTEs will increase or decrease unit costs accordingly. It is significant, however, that PFOG, who had formerly used their own formula for calculating FTEs, have recently adopted the CDP formula which gives a higher weighting to part-time day/evening and evening-only students.

In order to make more meaningful comparisons of polytechnic unit costs over the five financial years in question, all expenditures were discounted in 1978 prices using an index provided by DES for this purpose. Finally, in addition to overall unit costs for each polytechnic an attempt has been made to apportion expenditures to Group I (laboratory-based) disciplines and Group II (classroom-based) disciplines and so determine Group I and Group II unit costs.

ENROLMENTS

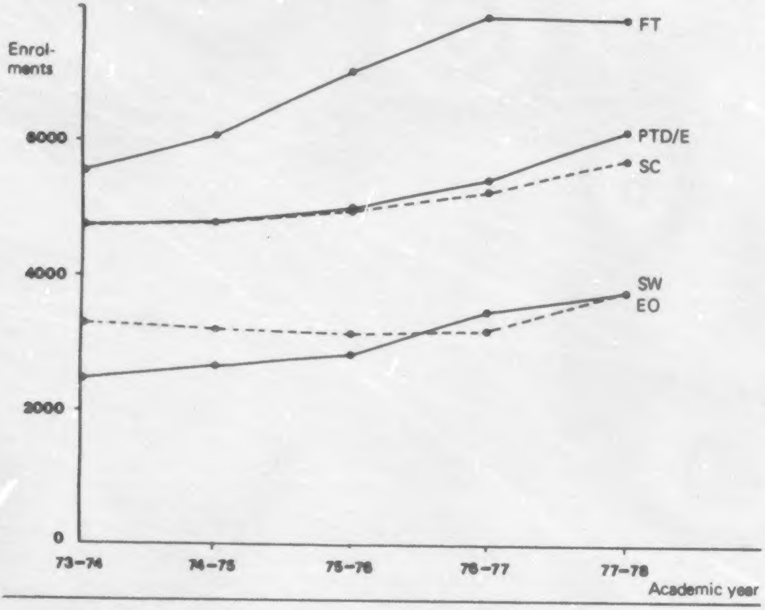
The 30 polytechnics have evolved, expanded and developed an identity quite independent of each other. The pattern of enrolments reflects this quite clearly. Overall, they have experienced a steady increase in enrolments for all modes of attendance (Figure 9.1), with the most marked increase being in full-time students. The only exception to this general trend is evening-only attendance which suffered a very slight decrease until 1975/76, since when it has been reversed. The overall picture would appear, therefore, not to support the much vaunted criticism of polytechnic enrolment trends, namely that they are not being 'true to their purpose' and are concentrating on full-time courses to the detriment of part-time courses. The only evidence of this occurrence is limited to enrolment patterns at the ILEA polytechnics.

Looked at individually, however, the polytechnics can be seen to have very different patterns of enrolment both in terms of actual numbers enrolled, the proportions of students attributable to the different modes of attendance and enrolment trends over the five years in question. Given such diversity, is it not unreasonable to expect the unit costs of these institutions to be in any way comparable?

FULL-TIME EQUIVALENTS

When academic year enrolments are converted to financial year FTEs and put together according to Group I or Group II disciplines the overall increase in student numbers is duly reflected, but a further significant trend is also revealed. The growth which has occurred across all modes of attendance has taken place in the Group II disciplines. As a consequence the polytechnics have experienced a change in the mix of students in terms of the types of subjects studied. This may well be a more worrying trend than the supposed neglect of part-time study. With the polytechnics only now celebrating their tenth anniversary it is difficult to make any assessment of the effect of their manpower output. Whilst the government has no explicit policy concerning the distribution of students amongst arts and science subjects in the polytechnics manpower requirements have to be met to supply the country's needs. If there is any suggestion that the polytechnics are turning away from the Group I disciplines on account of the inevitably higher costs of providing such courses then the pre-occupation with reducing costs at any price may be seen to be threatening the whole polytechnic ethos and potentially damaging the country.

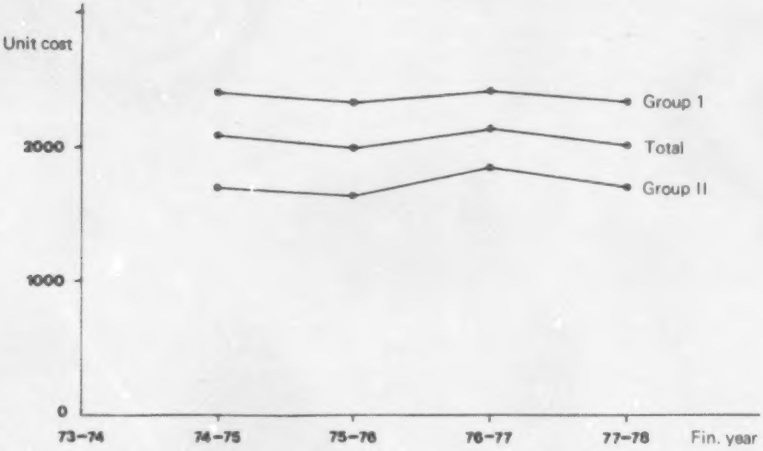
Figure 9.1 Total enrolments 1973-4 to 1977-8: all polytechnics



UNIT COSTS

Turning to unit costs, ie total revenue costs divided by FTE student numbers, it is apparent that for all polytechnics average unit costs have tended to fluctuate slightly over the period in question (Figure 9.2), and that, as expected, Group I unit costs are on average some £500 - £800 higher per FTE than those of Group II. Trends in individual polytechnics are, however, as one might expect given the variation in enrolment patterns and student mix already referred to, very varied. In some cases (eg Polytechnic 21) there appears to be little difference between the unit cost of a Group I and Group II student and in this particular case unit costs have shown a steady decrease in both disciplines during the period in question. For other polytechnics (eg Polytechnic 17) unit costs are higher than average and are continuing to increase. Whilst some general trends may be drawn from the overall situation the picture that emerges for individual polytechnics is again one of great variation, with some institutions appearing to be very economic and others very costly. Once the identity of the polytechnic is known then comparisons of performance on this basis alone are immediately rendered meaningless. Polytechnic 21, for example, is situated outside London and its Group I provision is largely concentrated on the 'low cost' technologies. Polytechnic 17, again outside London, is an extremely dispersed institution with a high proportion of art and design students. Thus, the know-

Figure 9.2 Unit costs 1973-4 to 1977-8: all polytechnics



ledge of such factors as geographical location, types of courses offered and proliferation of sites make possible a more informed judgement about the viability of a performance indicator such as unit costs when considered in isolation.

UNIT COSTS AND HEADS OF EXPENDITURE

Furthermore, to concentrate solely on the overall unit cost of an individual polytechnic is to ignore the variations which may exist from polytechnic to polytechnic in the proportion of costs attributable to the various heads of expenditure (Figure 9.3).

The overall situation over the five years in question (Figure 9.4) shows, as expected, that a very substantial proportion of overall unit costs is attributable to academic salaries but that this proportion has been falling since 1974/75. All other costs have remained fairly static over time, with loan charges being revealed as the head of expenditure most likely to fluctuate and push up overall unit costs. Once again, however, the pattern varies quite considerably from polytechnic to polytechnic. For example, Polytechnic 15 (Figure 9.5), whilst displaying some of the overall trends and relative proportions of costs, shows a significant difference in loan charges for, being an ILEA polytechnic, these are virtually non-existent. In contrast, Polytechnic 22 (Figure 9.6), which again displays many of the overall trends, shows a substantial rise in loan charges since 1975/76 to the extent that by 1977/78 they accounted for a larger proportion of unit costs than academic salaries. On the other hand, Polytechnic 24 (Figure 9.7), whilst also experiencing an increase in the proportion of unit costs accounted for by loan charges, displays a quite different upward trend in academic salaries.

Figure 9.3 Definition of heads of expenditure

1 ACADEMIC
- Directorate and functional officers
- Departmental teaching staff
- Part-time lecturers - sessional and casual
- Research staff
- Staff development
- Other expenses

2 NON-TEACHING
- Administrative and clerical staff
- Technicians
- Computer staff
- Library staff
- Student services staff
- Staff development
- Other staff and expenses

3 PREMISES
- Repairs and maintenance
- Wages of staff
- Fuel and light
- General rates
- Caretaking and cleaning materials
- Caretaking and cleaning staff

4 SERVICES
- Furniture and equipment
- Library book fund
- Exam expenses

5 OTHER
- Owned transport
- Hired transport
- Staff travel
- Student transport and subsistence
- Printing and stationery
- Postage
- Telephones
- Insurance
- Advertising
- Publicity
- L.A. Central Establishment
- Agency services
- Directors fund
- Hospitality
- Other expenses

6 REFECTORIES/HOSTELS

(a) Refectories
- Income from sales - less provisions, less cost of preparation & serving
- Other salaries and wages
- Repairs and alterations etc.
- Fuel, water and cleaning
- Fixtures fittings and equipment
- Furniture
- Laundry and clothing
- Establishment and other expenses

(b) Hostels
- Academic staff
- Catering staff
- Clerical staff
- Repairs, maintenance and alterations
- Fuel, water and general rates
- Cleaning staff and materials
- Furniture and equipment
- Provisions
- Transport
- Establishment Expenses
- Less student fee and other income

7 LOAN CHARGES
- Computers
- Buildings
- Equipment
- Rents on sites and buildings
- Capital expenditure on:-
  - buildings and land
  - initial furniture and equipment
  - equipment - Key Sector
  - equipment - non Key Sector
  - computers
  - other

Figure 9.4 Unit costs and heads of expenditure 1973-4 to 1977-8: all polytechnics

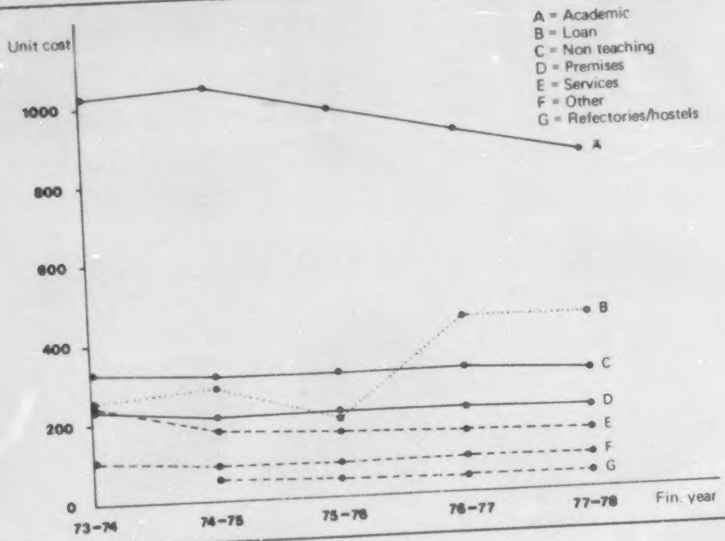


Figure 9.5 Unit costs and heads of expenditure 1973-4 to 1977-8: Polytechnic 15

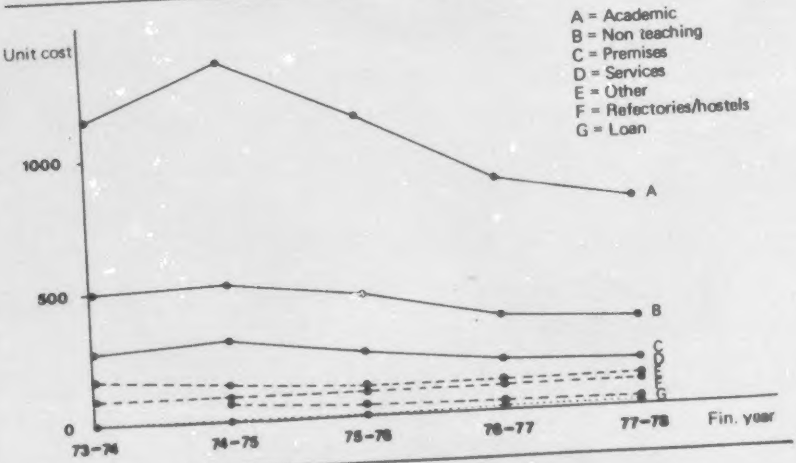


Figure 9.6 Unit costs and heads of expenditure 1973-4 to 1977-8: Polytechnic 22

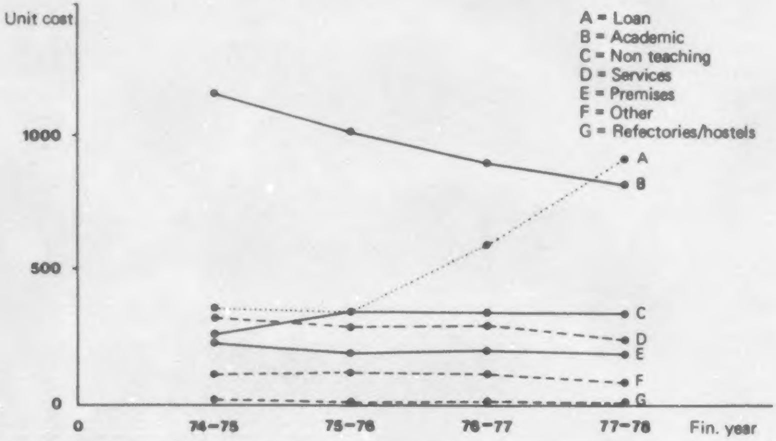
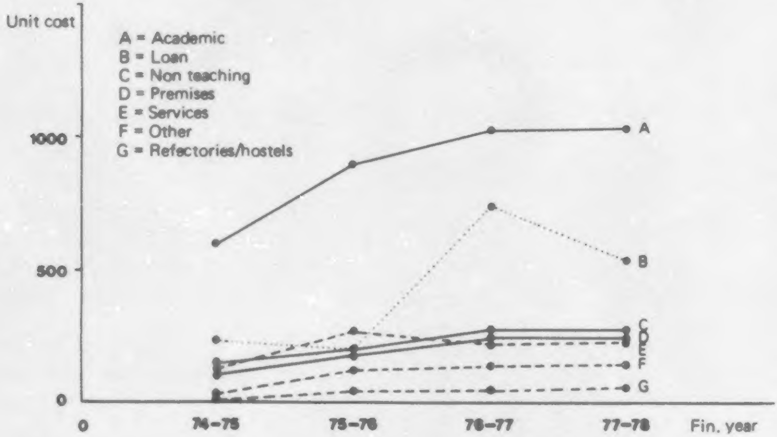


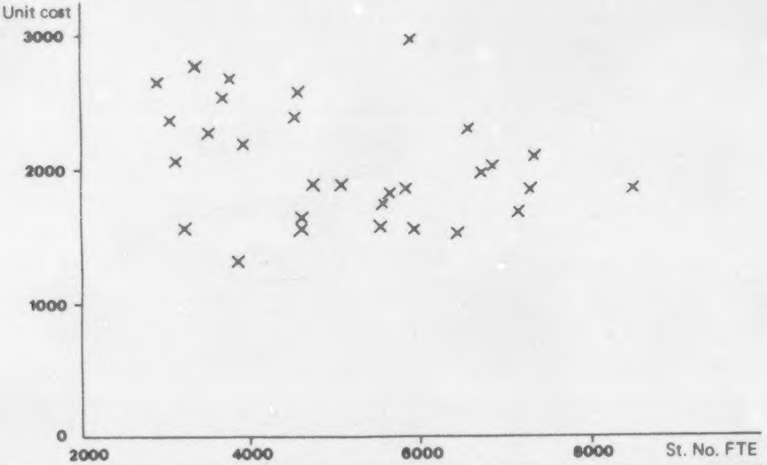
Figure 9.7 Unit costs and heads of expenditure 1973-4 to 1977-8: Polytechnic 24



UNIT COSTS AND FTEs

More often than not, the only factor deemed to have any bearing on unit costs is the size of an institution in terms of FTEs, due to the commonly held view that the larger the institution the lower the unit cost. The 1966 White Paper A Plan for Polytechnics and Other Colleges said: 'It is unlikely that the full educational and economic advantages of developments on Polytechnic lines will be secured in institutions with less than 2,000 full-time students.' However, the 'economies of scale' argument does not appear to be quite as clear cut as that on examining the relationship between unit costs and FTEs. In 1973/74, when several polytechnics had less than 2000 full-time and sandwich students, it was true to say that the smallest institution had the highest unit cost and the three largest institutions the three lowest unit costs. As for the rest, the relationship is less conclusive (qv Burnip and Lawley 1977). By 1977/78 (Figure 9.8), by which time all polytechnics had more than 2000 full-time and sandwich students, there appears to be little correlation at all between unit costs and FTEs.

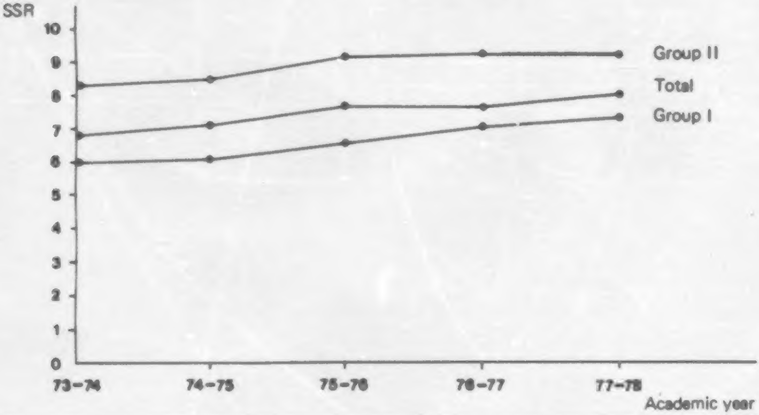
Figure 9.8 Unit costs and FTEs: financial year 1977-8



STAFF/STUDENT RATIOS

A highly controversial measure used for inter-polytechnic comparisons of efficiency is the staff/student ratio (SSR). The pitfalls are, however, obvious. The SSR may be manipulated upwards or downwards depending on the method of calculation used, with large question marks hanging over the weightings given to research assistants, short courses and postgraduate students. An examination over a period reveals that the polytechnics enjoyed favourable SSRs at the outset and during the period of rapid growth, but that in recent years there has been a steady increase in the ratio of students to staff in both Group I and Group II disciplines (Figure 9.9). Once again, however, trends in individual polytechnics do vary.

Figure 9.9 SSRs 1973-4 to 1977-8: all polytechnics



It is difficult to say anything about the efficiency of polytechnics merely by considering SSRs. This makes the notion of funding based on SSRs questionable since the system might penalize those polytechnics which appear to be attempting to increase efficiency.

UNIT COSTS AND SSRs

On examining the relationship between unit costs and SSRs over a period (Figure 9.10 and 9.11), it is apparent that very little correlation existed between these two variables in 1973/74 but that by 1977/78 there was some basis for saying that those polytechnics with the more favourable SSRs were incurring higher unit costs than those with a larger ratio of students to staff. Attempts to assume relationships between these quantities, however, are to be treated with the utmost caution. What is evident so far is that whilst modes of attendance, student mix, SSRs and unit costs when looked at in isolation may reveal something about a particular polytechnic, they do not individually or even collectively reveal all the diverse aspects of a polytechnic which make that one unique. This might be a rather negative conclusion, but it is nevertheless an important one. The question is what might these other aspects be?

LOCATION

The nature of the polytechnic ideal was such that their location was bound to be closely identified with industrial areas. The majority are located in big centres of

Figure 9.10 Unit costs and SSRs: financial year 1973-4

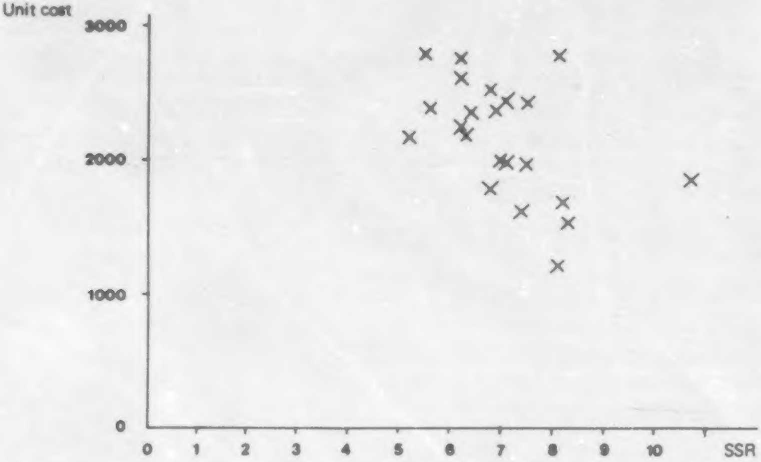
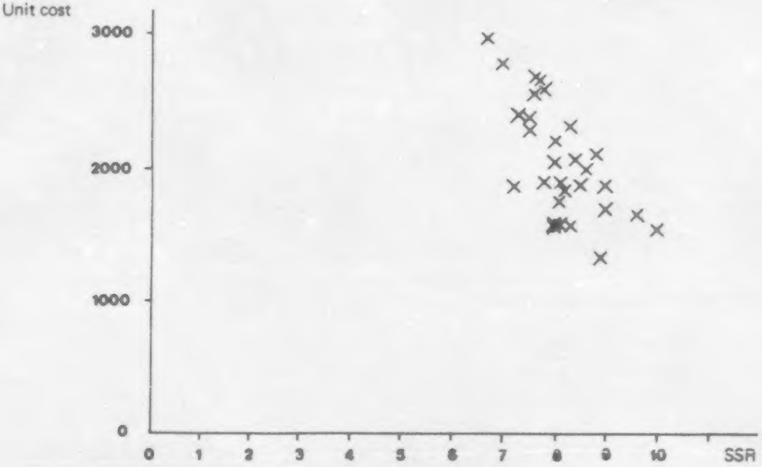


Figure 9.11 Unit costs and SSRs: financial year 1977-8



industry and commerce and they tend to be very much city-centre institutions occupying one, but not usually more than one, expensive city-centre site. Although the exceptions to this pattern are few, they do exist and sweeping generalizations made about polytechnics on the basis of their location alone must be avoided.

STANDARDS OF ACCOMMODATION

The polytechnics at the time of their establishment inherited the buildings of their constituent colleges and most of them have also absorbed one or more of the former colleges of education in the process of their development. The quality of the building stock has, therefore, been determined by external decisions and not by the polytechnics themselves and, in fact, very little was known about the accommodation situation in polytechnics until the CDP in conjunction with DES A & B Branch initiated an investigation into polytechnic buildings to determine amongst other things the quantity and quality of sub-standard accommodation. The first report was presented to the CDP members at their annual conference in April 1979, and related to the academic year 1977/78. For the purposes of the exercise buildings were assessed under one of six categories dependent upon their state of repair and expected life.

A = Satisfactory Buildings
B = Unsatisfactory Buildings : Environmentally undesirable, but usable for 2 years
C = Unsatisfactory Buildings : Costing 10-25% of current building costs to bring up to standard for a life of more than 5 years
D = Unsatisfactory Buildings : Costing 26-50% of current building costs to bring up to standard for a life of more than 5 years
E = Unsatisfactory Buildings : Costing more than 50% of current building costs to bring up to standard for a life of 2-5 years
F = Short Life Buildings (1 year)

Twenty-five polytechnics took part in the exercise and the distribution of net space amongst the building categories is given in Figure 9.12. Although the overall figures reveal a pleasingly high proportion of space in Category A, the corresponding percentages for individual polytechnics show a great deal of variation in accommodation standards.

PREMISES-RELATED UNIT COSTS

In the light of this knowledge about building standards, it would be ridiculous to suppose that premises-related unit costs (ie excluding loan charges) for individual polytechnics are, or could be, in any way comparable. Furthermore, unit cost per FTE takes no account of area, which must be a factor influencing premises-related expenditure. A comparison of the premises-related unit costs of five polytechnics with good standards of accommodation and five with poor standards revealed that costs per FTE for 1977/78 were remarkably consistent regardless of the condition of buildings. However, when these costs were re-calculated on the basis of cost per m^2 gross (gross area figures being taken from the CDP/DES Survey), then there was some indication of a relationship between high expenditure per m^2 and good standards of accommodation and vice versa. What the implications of this are one can only surmise. The accommodation survey is currently being updated so it is not yet possible to ascertain whether the level of expenditure on main-

Figure 9.12 **Relationship between net area of polytechnics and the categories of their buildings**

Code	A%	B%	C%	D%	E%	F%
02	69.9	30.1	-	-	-	-
03	82.8	10.9	2.1	-	4.2	-
04	98.6	0.5	-	-	-	0.9
05	48.2	24.2	-	22.3	5.3	-
07	97.7	2.3	-	-	-	-
09	90.0	2.8	-	5.0	0.5	1.7
10	73.7	18.3	-	5.8	2.2	-
11	73.7	-	-	15.0	3.5	7.8
12	100.0	-	-	-	-	-
13	100.0	-	-	-	-	-
14	40.8	27.6	30.0	1.6	-	-
15	40.3	22.1	-	25.4	2.1	10.1
17	82.6	-	-	-	17.4	-
18	96.8	2.1	-	1.1	-	-
19	63.9	-	9.6	-	26.5	-
20	59.5	40.4	-	0.1	-	-
21	32.7	31.2	15.8	4.8	15.5	-
22	90.3	6.0	-	-	-	3.7
23	69.2	27.0	-	1.5	1.3	1.0
25	98.4	0.9	0.7	-	-	-
26	96.2	2.4	-	-	1.4	-
27	90.5	9.5	-	-	-	-
28	35.5	50.2	-	11.0	3.3	-
29	96.2	-	1.2	-	1.9	0.7
30	100.0	-	-	-	-	-
Average	76.7	12.7	2.5	3.7	3.6	0.8

NOTE Figures for 25 polytechnics only
SOURCE DCP/DES Survey of Polytechnic Accommodation 1977/78

tenance has been (a) sufficient to up-grade buildings into a higher category, (b) sufficient to maintain buildings in the same category, or (c) insufficient and, therefore, the cause of re-classification in a lower category. Nor are area and condition of buildings likely to be the only factors involved in generating premises-related unit costs. As the preliminary findings have indicated of the Delany Survey on non-teaching costs in polytechnics, such additional factors could be intensity of use and local authority discretion. Indeed, a cursory examination of premises-related unit costs in relation to the amount of spare or deficit capacity in an individual polytechnic has revealed that the two most overcrowded, ie each with a deficit of over 1000 FTE places in 1977/78, had two of the highest premises-related unit costs per m^2 gross; both are ILEA polytechnics.

SITES

For the purposes of the exercise a separate site is one whose position entails considerably longer student travel times than does a concentrated campus polytechnic. Of the 25 polytechnics which took part in the accommodation survey only two described themselves as single-site, though both of these had overall unit costs well above the average for 1977/78. The remaining polytechnics are made up of between two and twelve sites. Whilst it is true that for 1977/78 the polytechnic with the highest number of sites had the highest overall unit cost, there does not appear to be any clear cut relationship between these two variables, but rather an indication that dispersion implies a different philosophy of operation and that the balance of expenditures both under and within the various heads of expenditure will be different.

RESIDENTIAL ACCOMMODATION

Residential accommodation was not included within the scope of the CDP/DES Survey, but a survey carried out by the CDP in 1976 does throw some light on the variation in provision. The polytechnics did not inherit a clear policy on residential accommodation and as the expansion on a local basis has varied quite considerably, the demand for and provision of such accommodation must inevitably vary also. The survey revealed, for example, that the percentage of local students on full-time and sandwich courses in 1975/76 varied between 12 per cent and 75 per cent with an average of 29 per cent and that the number of polytechnic beds (including amalgamated college of education beds) expressed as a percentage of non-local students varied between nil and 44 per cent, with an average of 25 per cent. The survey also revealed that at only 7 of the polytechnics were student numbers related to the amount of accommodation available and 6 of the 7 plus one other admitted giving preference to local students, 'other things being equal'.

It is therefore not surprising to find that unit costs for refectories and hostels for the year relating to the survey, 1975/76, ranged from £9 to £151 per FTE with, generally speaking, polytechnics with the greater provision in relation to full-time and sandwich non-local students incurring the higher unit costs.

OTHER FACTORS

The list of factors highlighted above as having a bearing on unit costs is by no means exhaustive. Others have been identified, such as the range of courses provided, the development and run-down of courses and the age and grading profiles of staff, all of which are no less important than those discussed here.

CONCLUSION

Polytechnics are about multi-disciplinary, multi-mode higher education for many arts and many skills for many purposes in many places.

Individual polytechnics display unique characteristics in terms of a variety of indicators. It is only, therefore, the collective use of these indicators that can portray a polytechnic. Such indicators include space utilization, standards of accommodation, residences, number of sites, location, modes of attendance, student mix, SSRs, staff profiles, range of courses, research involvement, academic excellence and reputation, the attainments of students (these latter items not dealt with in this paper), as well as unit costs including their dispersion over the various heads of expenditure. It would be impossible, therefore, to regard any one of these, least of all unit costs, as indicative of polytechnic performance. Rather, a series of measures must be formulated and used to describe a polytechnic.

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10 Institutional Performance

LIMITATIONS OF THE STUDENT - STAFF RATIO AS A RESOURCE CONTROL

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BACKGROUND

Courses in the non-university sector of UK further and higher education are classified into five 'categories of work'[1]. Categories I, II and III are concerned with programmes of study at first degree or equivalent standard and above and are designated as Advanced Further Education (AFE). Categories IV and V are concerned with courses at National Diploma or equivalent standard and below and are designated as Non-Advanced Further Education (NAFE). Apart from the thirty polytechnics, AFE accounts for 30 per cent or more of the workload in 124 colleges of further and higher education in the 'public sector'.

All recurrent expenditures on AFE are 'pooled'. Providing authorities submit claims to the Advanced Pool (established in 1959) according to their spending on AFE. These claims are totalled and reapportioned to all local authorities on the basis of their school populations (for 69 per cent) and non-domestic rateable values (for 31 per cent). Thus some authorities are net contributors to the Advanced Pool and others make net withdrawals.

The operation of the Pool is overseen by the Pooling Committee chaired by the Department of Education and Science but with members drawn from the local authority associations. The Committee's terms of reference are:

> 'to consider and keep under review the arrangements for pooling educational expenditure and to make recommendations to the Secretary of State or to the Local Authority Associations as may be appropriate.'

The pooling arrangements have long been the subject of controversy. The system offends against the principle that an authority should only be committed to expenditure over which it has direct control. Moreover, as it currently operates, the size of the pool is determined in arrears and it may invite extravagence rather than economy.

In an attempt to meet some of these criticisms the Pooling Committee issued in 1972 via the local authority associations the Memorandum on Student Staff Ratios for Advanced Level Work in Polytechnics and Colleges of Further Education which suggested that work in colleges should be categorized into two groups - Group I containing laboratory-based subjects and Group II comprising of classroom-based subjects. For each group a student/staff ratio (SSR) band was recommended as a target. These bands were:

Group I : 7.5 - 8.5
Group II : 9.2 - 10.2

In 1972 the Pooling Committee had no power to control expenditure and the memorandum was simply an exhortation. The education bill currently before parliament would give the Secretary of State power to fix a maximum sum available to the Advanced Pool from the financial year 1980 - 81. Exactly how this 'capped' pool would be disbursed to authorities and, thence, to colleges is not yet clear but it seems likely that it will relate to agreed unit costs. In so far as lecturers' salaries account for between 60 and 70 per cent of total recurrent costs in further education, agreed claims will be very much a function of SSRs.

Indeed, at the request of the local authority associations the Department of Education and Science is now moving towards the collection and publication of data on SSRs for all colleges of further education for all 'categories of work' (ie NAFE as well as AFE). This mechanism is now and is likely to remain in the future the most important single resource utilization 'performance indicator' in the 'public sector'.

THE STUDENT/STAFF RATIO

As explained in the Pooling Committee memorandum and later illustrated in a booklet published by the Councils and Education Press[2] the SSR currently operated in the public sector is defined as follows:

If S = the FTE (full-time equivalent) students;
T = the FTE teachers;
ACS = the 'average class size' provided;
ALH = the 'average lecturer hours' (ie the typical class contact provided by a FTE teacher); and
ASH = the 'average student hours' (ie the typical taught hours of a FTE student)

Then the teaching establishment required by a college is given by:

$$T = \frac{S}{ACS} \times ASH \times \frac{1}{ALH}$$

Whence the SSR $= \frac{ACS \times ALH}{ASH}$

Part-time students are converted to FTEs by aggregating part-time students taught hours and dividing them by the typical taught hours of a full-time student, whilst part-time teachers are converted to FTEs by aggregating their class contact hours and dividing through by 18.

Now if we wish to raise the SSR (and this presumably would be an objective of an administration concerned to constrain public expenditure) we arrive at the 'rules' for successful performance:

Enrol as many students as possible.

Teach the students in timetable situations for as few hours as possible[3].

Teach the students in as large a class size as possible.

Require the teachers to provide as much class contact as is allowed by their conditions of service.

It has been shown elsewhere[4] that these rules are in direct conflict with those derived from the Burnham agreements[5], the conditions of service jointly agreed between the local authority associations and the National Association of Teachers in Further and Higher Education (NATFHE)[6] and the normal establishment practice of many, if not most, authorities. Under these various arrangements:

- Many authorities determine a college's teacher establishment by reference to either last year's actual teacher class contact hours or next year's forecast class contact hours.
- The salaries of principals, vice-principals and heads of departments are related to aggregated 'student hours in college' weighted by academic level.
- The higher the academic level the greater the number of senior teaching posts and, moreover, the higher the grade of the lecturer the fewer class contact hours he is required to provide.

Self-interest therefore dictates the following:

- Enrol as many students as possible to courses at as high an academic level as possible.
- Teach the students for as many hours as possible.
- Teach students in classes which are as small as possible.

These rules are not in line with the remedial and 'second-chance' nature of much of further education nor, for that matter, are they in line with what little we know about effective learning situations. Furthermore, it is a moot point whether the role of teachers *qua* teachers is more or less difficult when confronted by students following advanced courses. Certainly the messages coming across to the colleges do not encourage a search for more economic modes of operation. A rethink of the under-pinning philosophy of the Burnham and conditions of service 'package' is perhaps overdue, as is some attempt to resolve the inconsistencies between it and the implicit (if not explicit) purpose of the SSR performance indicator.

Meanwhile, the SSR is not without its critics. A fundamental objection to it and, indeed, to most LEA establishment practice is the focus on conventional timetabled class and laboratory situations. As currently defined the SSR conversion of part-time to full-time equivalent students is by comparison of 'eyeball to eyeball' classroom contact between students and teachers. Again, most authority practice is to establish teaching posts by reference to forecast teacher class contact. Under normal conditions of service the majority of teachers in further education are required to spend about 20 out of the minimum of 30 hours in college per week in front of a class. The use of the balance of 10 hours is not defined and may be spent in preparation, marking or in any of the many tasks in the interface between teaching and administration. Where learning situations are developed which require more than the normal amount of out-of-class activity the only way to proceed with many authorities is to negotiate class contact 'remission'. The implication is that the only form of respectable teaching is that which involves the teacher standing in front of his class. Neither the Burnham and conditions of work 'package' nor the SSR as currently defined can cater with the trend towards 'open learning' with students working with the support of teachers but at a distance from the college and deciding upon their own patterns of attendance.

There is a case for moving the SSR measurement process away from class contact and taught hours towards a head count of students under whatever classification seems appropriate - modes of attendance, discipline area, academic level, open learning. This head count might then be converted to FTEs by nationally determined conversion factors which could incorporate weights reflecting society's priorities: if so these weights might be expected to change over time and would not be solely concerned with academic level.

According to Pratt[7] the cardinal sin of the SSR as defined by the Pooling Committee is that it is a 'grossly incompetent' confusion of inputs (staff and students) with outputs (quality of learning, education or whatever). Now the Pooling Committee's definition of SSR is a kind of measure of a kind of output since 'student places' can be regarded as an output even if they are FTE students and not actual people[8]. Of course, the indicator has its limitations, of which the more careful proponents of this approach are well aware[9]. Pratt's complaint is that the limitations of the indicator are not well understood by those who use it in making decisions about resource allocation. The problem is neatly identified by Kronig[10] who distinguishes between 'economic return' and 'thrift':

> 'An "economic return" means an attempt to achieve an optimal relationship between expenditures and the resulting returns, "thrift" means the avoidance of any expenditure which is not strictly necessary, or not necessary at that particular level.'

He goes on to argue that in universities and colleges:

> 'the economic return principle disappears for lack of measurable income items, and thrift becomes the dominant consideration.'

Pratt's argument seems to be that while politicians and bureaucrats strive merely to achieve thrift, we (the educationists?) must substitute the principle of economic return as the main aim. To do this, he says, we must take quality into account, and the way to achieve this is to develop alternative performance criteria which are related to the fundamental purposes of education. At this point the argument seems to have gone astray. If the performance monitoring process cannot cope with the SSR criteria it is unlikely to cope with a range of more complex qualitative criteria. In any event the performance indicator however constructed - simple or complex - cannot be discussed sensibly outside its process and structure context.

THE MANAGEMENT CONTROL MODEL

Anthony et al[11] define management control as 'the process by which managers assure that resources are obtained and used effectively and efficiently in the accomplishment of the organization's objectives.' Others tend to distinguish between planning (the setting of goals) and control (matching up to the goals that have been set). Whichever definition is used, a systems model of management control is usually implicit or explicit. Such models usually assume that:

(i) there is a 'standard', corresponding to effective and efficient performance;
(ii) actual performance can be measured;
(iii) when actual performance is compared with the standard and variance information is fed back, this information can be used to intervene in the process so as to eliminate unwanted differences.

There is no doubt that this model of control has been successful in the design of machines, but organizations involve people. The proper functioning of the control system presupposes, firstly, that these actors will send and correctly receive the appropriate messages (ie communicate) and, secondly, that they will be motivated to act according to the logic of the model.

Furthermore, the model assumes that standards can be identified, performance measured and the feedback information used to put the organization back on target. How far are these assumptions realistic in an educational context? Education, particularly higher education, is characterized by widely divergent and strongly held views concerning objectives, an inability to identify and trace all the outcomes, and no real understanding of the relationship between inputs and outputs. In other words the environment in education is by no means ideal for the successful operation of the traditional control model. However, education is not alone in its failure to meet the basic conditions. Often these are not met in industrial contexts let alone in the range of other public sector activities - health, social services, law enforcement. This has not prevented serious attempts to force, for example, Planning, Programming Budgeting Systems (PPBS) deeply wedded to the traditional model of control on both sides of the Atlantic.

POLITICAL NEGOTIATION AND CONTROL

Blanket application of the traditional control model is likely to do more harm than good. Nevertheless there are likely to be parts of most organizations where the traditional model may be appropriate. The SSR (particularly if it was measured from a base of head counts rather than classroom contacts) is a useful device when it is applied to large aggregations such as colleges or broad discipline areas. There is no reason to suppose, however, that all parts of a college or all sections within a discipline area should necessarily operate the same SSR. It ought to be a matter of academic judgement within a college as to which parts need to be nurtured and cushioned with extra resources.

Geert Hofstede[12] argues that the essence of situations where the traditional control model is inappropriate is that they are political and decisions are based on negotiation and judgement.

> 'What this means is that policy is not merely composed of rational elements; its main ingredients are values, which may differ from person to person, and norms which are shared within groups in society but vary over time and from group to group. It makes little sense to speak of control processes here, at least in the formal sense in which such processes are described in cybernetic situations. It does make sense to speak of a control structure, taking into account the power positions of the various parties in the negotiations. Within this structure, we may study the control games played by the various actors. Once resources are allocated, there is no automatic feedback on the effectiveness of their use; the only controls possible are whether the resources were really spent and if no funds were embezzled. Beyond that, it is a matter of trust in those in charge of carrying out the programmes- the real control takes place through the appointing of a person to a task. Activities once decided upon will tend to perpetuate themselves; corrective actions in the case of ineffective or inefficient activities are not automatically produced by the control system but ask for a specific evaluation study; deciding upon such a study is a political act which may upset an established balance of power.'

RESOLVING THE PROBLEM IN AFE

Pratt's prescription of bigger and better performance criteria is misguided. However, his diagnosis that quality and effectiveness must be made to count more heavily in resource allocation holds good. How is it that quality can be ignored? Consider the management of non-university higher education. Colleges and polytechnics are enmeshed in a complex web of relationships with other external agencies. From the college's perspective some of these relationships are imposed, while others - such as those with the CNAA are at least partly self-set since college nominees tend to dominate and determine the operation of the validating bodies. Similarly, some relationships are primarily qualitative, as in the case of course validation, while others tend to be expressed in quantitative terms as when a local authority decides the size of a college budget. In a broad sense, some of the controls exerted on an institution are concerned with the flow of resources to and through the institution - these may be termed metabolic controls. On the other hand, there are checks and balances on the quality of the educational process and these can be described as functional controls, since they relate to the primary function or purpose of the institution. The model underlying these distinctions is drawn from Vickers[13] and its implications for AFE are described more fully elsewhere[14].

If we define the system in these three dimensions: imposed - self-set, quantitative - qualitative, metabolic - functional, we define two clusters of governing relations. The first cluster comprises functional controls involving students, teachers, course and subject committees, academic boards, external examiners, validating bodies, Her Majesty's Inspectorate (HMI) and regional advisory councils. These functional controls tend also to be qualitative and at least partly self-set. The second cluster of relationships is essentially metabolic involving heads of departments, principals and directors, governing bodies, LEAs, the local authority associations, the Pooling Committee and the Department of Education and Science. Such relationships tend also to be quantitative and imposed.

AFE gets the control that the structure of the system dictates. To inject quality into the debate about costs, and substitute the principle of economic return for thrift, institutions must sacrifice some of their functional autonomy in exchange for a better (more reasoned) resource allocation. What is required is a system of control which can unify functional/academic decisions and metabolic/resource decisions. The way to achieve this is not to search for bigger and better sets of decision and performance criteria which can then be grafted on to the present dichotomy. Rather, the way ahead is to change the structure of decisions and create processes which can cope not only with the economic-rational but also sense and map 'values' and 'norms'. For AFE this means the creation of an AFE council which would work within defined budget limits and be staffed primarily with members and officers sympathetic and accepatable to the academic community. An AFE council would embody both academic and financial authority and would offer the possibility of a resource allocation process in which quality would count and decisions would be more likely to be seen as valid on all sides. Yet such validity would not necessarily require explicit criteria to justify decisions and to control performance. If the decision-making process is acceptable, it is much easier to account for specific decisions on ad hoc grounds and there is less need to search for a set of general criteria to be universally applied.

The pursuit of a set of all-embracing performance criteria in higher education is subject to at least three major difficulties. Firstly, it is not at all clear that objectives can ever be specified loosely enough to be broadly accepted yet tightly enough to be operationally useful. Secondly, even if it is possible to specify a set of objectives, it may not be desirable. Tight definitions might squeeze out of the system that valuable diversity of view which can happily exist amid the present confusion[15]. Thirdly, even if it were possible and desirable to develop comprehensive performance criteria it would take a very long time and the results would be comprehensible only to a few. For an illustration of the complexity of recent efforts see Cameron[16]. Whatever else we can say about them, control procedures ought to be intelligible to those who are asked to communicate, and be motivated by, their messages.

SUMMARY

Currently, the most important institutional performance indicator deployed in the public sector of higher education is the SSR. As it is presently defined it is in direct conflict with the Burnham (FE) salary and conditions of work agreements and with most local authority establishment practice. It is a crude device but it serves a useful purpose at a sufficient level of aggregation and it might be improved by starting from a different measurement base - student 'heads' rather than classroom contact.

Education is one of the many settings where the traditional model of control is inappropriate. The solution appears to lie not in an extended search for more sophisticated performance criteria but in an examination of the political structure in which decisions are reached and power and responsibility assigned and withdrawn. The chances are that we will discover that the structure and process is far from being scientifically rational but more like Wildavsky's[17] budgeting:

> 'an incremental process, proceeding from a historical base, guided by accepted notions of fair shares, in which decisions are fragmented, made in sequence by specialised bodies, and coordinated by repeated attacks on problems and through multiple feedback mechanisms.'

We discern a dichotomy in the governing relationships of AFE between on the one hand, the academic, self-set, qualitative, functional and on the other hand the resource, planning and control, imposed, quantitative, metabolic. The development of an AFE council along the lines indicated above might help to bring these forces together. In any event explicit performance indicators are not a prerequisite for valid decisions about resource allocation, nor are they a necessary component of 'illuminative' ad hoc studies of effectiveness.

NOTES AND REFERENCES

1 HMSO (1978) Scales of Salaries for Teachers in Establishments for Further Education in England and Wales.

2 COUNCILS AND EDUCATION PRESS (1972) Assessment of Curricular Activity and Utilization of Staff Resources in Polytechnics and Colleges of Further Education.

3 The Student Staff Ratio SSR $= \frac{S}{T}$

$$= \frac{Sft + Spt}{T}$$

Where Sft = Actual full-time students; and
Spt = Part-time students converted to FTEs by aggregating part-time students' taught hours and dividing them by the typical taught hours of a full-time student.

$$\text{Whence } \frac{S}{T} = \frac{Sft + Cpt\,\frac{(Sft)}{(Cft)}}{T}$$

Where Cpt = total taught hours of all part-time students; and
Cft = total taught hours of full-time students.

So the Rule
'Teach the students in timetabled situations for as few hours as possible' should be amended to read
'Teach full-time students in timetabled situation as little as possible and part-time students for as long as possible'.

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8 Conceptually in the area of instruction a college makes certain educational services available. In turn students bring a variety of preparations, motivations, aspirations and abilities to their learning. Hopefully, the net effect of these interactions is some change - 'value added' - in the students' characteristics. LEVIN, H. (1974) Measuring efficiency in educational production Public Finance Quarterly 2 (1) January is an example of the change in students' characteristics as the appropriate measure of educational outcomes. On the other hand it can be argued that the changes wrought in students' characteristics reflect their learning functions and are only indirectly related to the college's production function. Thus the outcomes attributable to the college (and the college only) are the magnitude, quality and duration of the instruction patterns made available. CARLSON, D. E. (1975) Examining efficient joint production processes New Directions of Institutional Research 2 Winter is an example of this approach.

9 See (for example) SIZER, J. (1978) Developing performance indicators for institutions of higher education OECD/CERI IMHE/GC/78.2 IMHE Topic Workshop on Performance Indicators for Institutions of HE. Paris (1978).

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15 'A plural society ... cannot place goals or ends for higher education in order within a context of agreed values, for in a plural society it is not certain on whose authority the cultural setting is defined. For this very reason, Universities can be seen to offer their own ideological goal - that of accepting and maintaining the tension between competing goals without burning the thread.' GOODLAD, S. (1976) Conflict and Consensus in Higher Education London, Hodder and Stoughton.

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11 Institutional Performance
SPACE UTILIZATION

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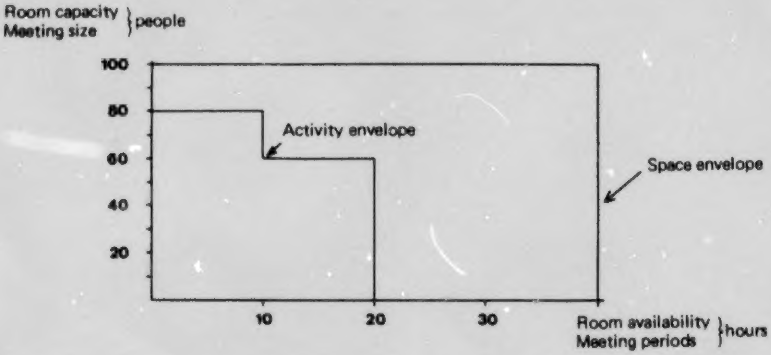
In the late 1960s a series of studies was started by the Unit for Architectural Studies at the then Bartlett School of Architecture at University College, London. University College was under pressure (as were other universities) to increase its student intake without adding to its accommodation and the Unit for Architectural Studies was concerned to assess current space utilization, to discover the constraints and assumptions which most affect it and to devise methods of improving it. The current bulge of students going through the higher and further education system is proving an incentive to pursue and refine this earlier work.

A method was devised which shows how spaces are used both in terms of time and of area.

Figure 11.1 illustrates this method of measuring space utilization.

Figure 11.1 Space utilization



The outer graph represents a room which can hold 100 people and which is available for 40 hours a week (space envelope); the inner graph represents the meetings which actually take place in the room; ie 10 hours of meetings of 80 people and 10 hours of meetings of 60 people (activity envelope). The two relevant factors are frequency and average occupancy which together produce utilization. In this case:

$$\text{Frequency} = \frac{20}{40} = 50\%$$

$$\text{Average occupancy} = \frac{(80 \times 10) + (60 \times 10)}{20} / 100 = 70\%$$

$$\text{Utilization} = 50\% \times 70\% = 35\%$$

In the case of University College overall utilization figures were found to be surprisingly low, at around 25 per cent for classrooms (DES 1974) although as pressures have built up, other, more recent studies have shown that higher levels are obtainable (Kenny 1977).

Although overall utilization figures are often low there can also be undeniable problems of temporary overcrowding and mismatch between room sizes and meeting sizes. Reasons for these problems include excessive departmental territoriality, over-dependence on what a room is called rather than what it can be used for, rigid habits of timetabling, and a peaking of activities at certain times of the week.

In order to improve room utilization at University College a suite of computer programs was written with the intention of overcoming the problems listed above. The computerized system has the unique advantage of carrying out simultaneously the normally separate processes of timetabling and room allocation (Rawlinson 1973; DES 1978). Using the system it is possible to reach utilization levels of 80 per cent (Chan 1978). None of this is to suggest that maximization of room utilization should be the only aim of any such system; rather the aim should be optimization of utilization, taking into account the paramount requirements of the appropriate and desired teaching and social patterns of activities.

As different subjects wax and wane in popularity, and as teaching methods and social expectations change, it is important for individual institutions to be able to redeploy their existing physical resources in a rational and acceptable manner (DES 1979) to suit different circumstances. This can only be done if there exists an accurate inventory of space and facilities together with some idea of how these are currently used. From the point of view of the physical environments of institutions, the eventual downturn in student numbers may well provide a chance to improve area standards and to achieve a better mix of accommodation types. Some of the opportunities and problems for better building use in a shrinking higher education system are outlined by Jockusch (1979).

In the same way that institutions can study and monitor the levels of utilization of different space types and of different facilities on different sites, so local authorities can monitor the space use performance of different colleges. At a time when duplication of resources is considered wasteful and expensive, it may be that accurate information on the relative pressures on different accommodation types in different colleges can help in deciding priorities and policies for concentrating in particular areas. It should never be enough, however, to assess only the use of physical resources without trying to assess the social costs, which are much less easy to measure, of relocation, transport and psychological upheaval.

While an institution's performance in terms of space utilization can be assessed by the institution's own manager and by local and central government officers, it should also be assessed by the people who established the brief for its buildings and by those who translated the brief into reality. This task is best performed when the brief-writers and architects are still available for comment, but even in the rare cases when they are, such appraisals are all too seldom carried out (Lee 1976). However, a one-off appraisal, or, preferably, a continuous appraisal process within an institution, concerned to assess the suitability, effectiveness, robustness and, increasingly, the flexibility of its buildings, provides invaluable information both for day-to-day managers and for the architects of future colleges and universities.

SUMMARY

Space utilization studies are concerned to assess the performance of a building and its occupants in relation to each other. In higher education it is important to ask: Is there an accurate inventory of teaching and non-teaching spaces and of the facilities they contain? Are teaching activities well matched in terms of size and requirements to the spaces that house them? Do timetabling habits and leanings towards excessive territoriality prevent the best use being made of existing space? Are physical resources being sensibly deployed within the institution, the region, the country? Does the building satisfy the requirements of its users, as stated by the brief, as designed by the architect and as voiced by its present occupants, staff and students?

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12 Institutional Performance
HOW OPEN IS OPEN?

A. Woodley Open University

INTRODUCTION

The performance of an institution of higher education can be judged against many criteria: teaching and academic standards, student wastage rates, cost-effectiveness, the calibre and employability of graduates, research contributions, etc. Criteria such as these are also important in evaluating the performance of the Open University as a university. However, a comprehensive evaluation of its achievements must also include an assessment of the extent to which it has lived up to its self-proclaimed open-ness.

WHAT DO WE MEAN BY 'OPEN'?

Lord Crowther, the first chancellor, attempted to summarize the philosophy of the OU in his inaugural address, delivered on 23 July 1969. He claimed that the university would be open in every sense:

> 'We are open, first, as to people .... We are open as to places .... We are open as to methods .... We are open, finally, to ideas.'[1]

Worthy aims indeed but how does one set about measuring whether or not these aims have been achieved? We begin by attempting to define the characteristics of an open learning system.

According to Coffey, open learning is essentially student-centred and an open learning system is one where restrictions which limit access to its courses have been removed, or provision has been made for students to overcome them.[2] Drawing on Coffey's work, Figure 12.1 shows the main ways in which an 'open' learning system would differ from a 'closed' one.

In short, an open learning system is one which offers students what they want, when they want it and how they want it. As Coffey makes clear, such a system would require the co-operation of numerous institutions and bodies. However, while the OU as a single institution could never provide a comprehensive open learning system, the framework presented in Figure 12.1 allows us to identify 'open' and 'closed' features within the present OU system. In theory the OU, with its lack of entry requirements, freedom of course choices and the ability to combine employment with study, is certainly more 'open' than other institutions of higher education - but what is open in theory may not be open in practice. Any final judgement on open-ness must involve a consideration of the students themselves and the progress which they make at the OU.

OPEN UNIVERSITY STUDENTS

The OU certainly offers opportunities to large numbers of people. In its first nine years of teaching it has admitted over 170,000 undergraduates and in 1979 there were 77,000 currently taking OU courses. Six out of every ten students admitted to the undergraduate programme gain some course credit and around one half of those who complete final registration in the first year go on to graduate.[3] Increasing numbers use their OU credits to gain admission to full-time courses elsewhere. But who are these students? Some would argue that if the OU were truly

Figure 12.1 Characteristics of 'open' and 'closed' learning systems

	Closed	Open
I ADMINISTRATIVE RESTRICTIONS	a) The student must attend in a specific place, at definite times, and over a named period of time	a) Minimal restrictions on time or place of study
	b) The student must join a class of a specified minimum size	b) No class size requirement
	c) The student must pay a certain amount towards the cost of the course	c) Provision to help financially disadvantaged students
II EDUCATIONAL RESTRICTIONS	a) The student has to accept the sequence of teaching and the teaching strategy that is offered. There will be little opportunity to select his own learning objectives	a) Opportunities for student to determine learning sequences, methods and objectives
	b) The student will have to meet minimum entrance requirements	b) Few if any entrance requirements
	c) Restrictive assessment methods	c) Constructive assessment methods
III INFORMATIONAL RESTRICTIONS	a) Information about courses not easily available	a) Adequate publicity for the courses
	b) Little help for the student in choosing between courses	b) Adequate counselling services

'open' the student population would represent a cross-section of the national population. Others would go further and say that groups such as the working class should be over-represented at the OU to compensate for disadvantages suffered earlier in the educational system. How far has the OU lived up to these ideals?

Educational Qualifications

In recent years four out of every ten students admitted to the undergraduate programme did not possess the minimum qualifications required for entry to a conventional degree course and one in ten had no formal qualifications at all. As a group OU students are better qualified than the national population but much less so than other higher education students. The second OU intake was less well qualified than the first one but since then there has been no discernable trend towards lower qualifications.

Sex

Women have traditionally been under-represented on degree courses and this imbalance was particularly marked in the case of the OU's first intake. However, over the years women have formed an increasing proportion of new students (44 per cent in 1979). Women are now better represented at the OU than at conventional universities. The women who are attracted to the OU tend to have higher qualifications than the men and this illustrates one of the problems involved in achieving true open-ness. If the OU had been less successful in attracting women it would have appeared to be more successful in attracting those with low qualifications.

Occupation

The great majority of working students in the OU's first intake were in high-grade white-collar occupations, especially teaching. The proportion of teachers fell in the second year and again in the fifth year and there were corresponding increases among those in lower level white-collar occupations and among manual workers. Since this time the figures have remained remarkably static. Manual workers continue to form only one in ten of new OU students whereas they represent almost one half of the total working population.

When considering male students on their own it can be shown that, while professional and technical workers are heavily over-represented and manual workers heavily under-represented, the proportion in lower level white-collar jobs almost matches the national population. Among the women, however, both manual workers and those in lower level white-collar jobs are heavily under-represented. Furthermore, the slight improvement in the proportion of manual workers has come almost entirely from the men.

Of course, not all OU students are in employment. Housewives are a significant group and in 1979 they formed 15 per cent of new students compared with 9 per cent in 1971. Other non-working students, such as the retired, the temporarily unemployed and those in institutions, rose from 2 per cent to 5 per cent over the same period.

Although many people hoped for greater things, the OU has certainly attracted significant numbers from disadvantaged groups. But what progress do they make as students? Is the opportunity they are offered a real one? In Figure 12.2 we compare the first-year progress of those with high and low previous qualifications for each of the foundation courses. A discrimination index is used which is simply the difference in the percentage pass rates between the two groups (eg if 60 per cent of the high group gained a credit and 40 per cent of the low group this would be entered in the table as +20). Perhaps not surprisingly those with low qualifications fared worse than those with high qualifications on each course and in each year. What is disturbing is the fact that the figures for later years are much higher than for earlier years. Except in the case of maths the figures have risen because the well qualified students have continued to perform at the same high level whereas the performance of those with low qualifications has declined. (With maths the pass rate for both groups has increased but it has done so more slowly among those with low qualifications). A similar analysis was preformed using occupations. Comparisons were made between the performance of professional and technical workers and that of manual workers. The same overall pattern emerged but in general the discrimination indices were somewhat lower than those found with qualifications. In contrast to this, women, the other 'disadvantaged' group, were more successful than men in their first year.

We turn now to graduation rates. By the end of 1978 54 per cent of those

Figure 12.2 Dependence of OU first-year success rates on subject and previous qualification

	Year of Study							
	1971	1972[2]	1973[2]	1974	1975	1976	1977	1978
Art	+ 9	+19	+19	+28	+28	+29	+29	+31
Social science	+12	+18	+26	+27	+28	+30	+32	+31
Maths	+37	+35	+38	+52	+49	+46	+48	+45
Science	+23	+28	+30	+30	+35	+31	+25	+34
Technology	Not presented	+11	+18	+28	+25	+20	+28	+22

[1] High qualifications = teachers certificate, university Diploma or university Degree

Low qualifications = No formal qualifications, CSE, RSA or less than five 'O' levels

[2] The results for 1972 and 1973 are based on the performance of new and continuing undergraduates

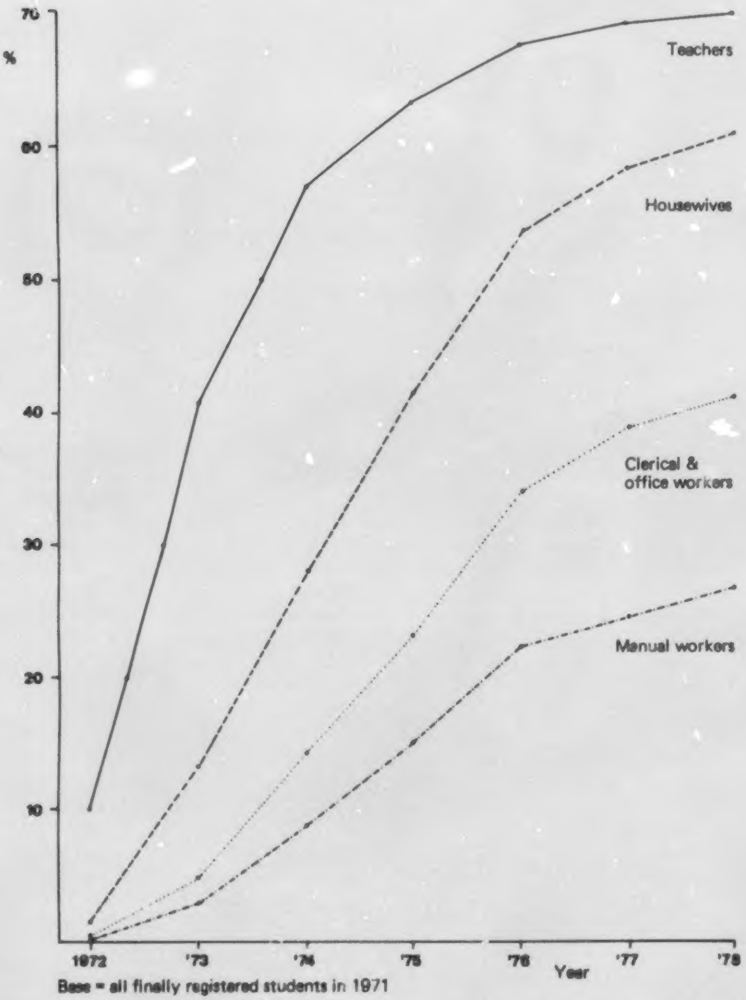
who had finally registered as new students in 1971 had obtained an Ordinary degree from the OU. The figure for those possessing the entry requirements for a conventional degree course was 62 per cent but among the 'unqualified' group it was only 40 per cent. As the 'unqualified' students were unlikely to have any credit examptions it was unexpected that they would graduate at a slower rate, but it now seems unlikely that they will ever catch up with the 'qualified' group. In Figure 12.3 we show the cumulative graduation rates for students from the 1971 intake in four occupational categories. The teachers fared best and around seven out of ten are likely to graduate. Housewives graduated at a slower rate in the early years but it seems likely that they will eventually catch up with the teachers. Among the clerical and office workers, slightly over four out of ten are likely to graduate. The picture is least encouraging for manual workers. Although small numbers of them continue to graduate it is unlikely that more than three out of ten will eventually gain a degree. Furthermore, the evidence presented above on first-year progress would suggest that these discrepancies will be even greater among the later intakes. Once again women prove to be the exception, with a higher proportion of them graduating than men.

Findings such as these, especially those concerning the characteristics of OU students, have led many people to criticize the Open University.[4] In the next section we look at the responses which the university has made to such criticisms.

RESPONSES TO CRITICISM

In 1962 Jackson and Marsden said that 'the concept of the "open" university entails a large new working-class intake'[5] and for many people the success or failure of the OU will be judged against this criterion. However, the Planning Committee did not specify the target population in terms of social class. For them the aim of the

Figure 12.3 Cumulative proportions of OU students graduating over time: by occupation



Base = all finally registered students in 1971

OU was to provide opportunities for higher education 'to all those who, for any reason, have been or are being precluded from achieving their aims through an existing institution of higher education'. Jennie Lee herself has said that 'the last thing in the world that we wanted was a proletarian ghetto!' Looked at in this way, as long as the OU continues to admit large numbers of people who want higher education, it can be claimed to be achieving its stated aims.

Other people, including the author, have taken the position that things are not as bad as they seem. While the OU has not attracted large numbers of educationally deprived adults it has attracted many students who were initially disadvantaged. For instance, a study of new undergraduates in 1975 showed that only one in three got as far as taking 'A' levels at school and one in five left without taking examinations at all. Similarly the fathers of one half of all students were manual workers and a further quarter were in lower level white-collar jobs. In general, OU students did not have the opportunity to enter a degree course on leaving school but since then have experienced a great deal of upward educational and occupational mobility.[6]

The OU's academic staff, with a few notable exceptions, have remained relatively silent on the issue of open-ness. Although Senate can generally be relied upon to block moves to make the OU less open by, for instance, altering admissions regulations, it does not provide a coherent pressure-group striving to make the OU more open. One conclusion reached by researchers from the Tavistock Institute was that 'the radicalism on which the OU was posited inevitably has become eroded over time'.[7] The idealistic aims of mass higher education appear to have been replaced by the more down-to-earth aims of producing more and better courses.

The argument put forward by Lord Perry, the vice-chancellor, is that it was inevitable that the OU's first students should be mainly well qualified middle-class people.[8] Non-graduate teachers, for instance, would be able to gain salary increases and promotions on the strength of their OU degrees. Furthermore, he saw this type of student intake as being in the best long-term interests of the OU. The drop-out rates would be relatively low and therefore the OU would stand a greater chance of surviving. 'If we succeeded with them we would not only have gained the time needed to polish our methods so that ultimately they might work effectively for less well prepared entrants, but we would also achieve the academic recognition that would enable us to tolerate higher drop-out rates.'[8]

CONCLUSIONS

Educationally disadvantaged groups can be attracted to and succeed with degree-level studies. In the case of the OU this has been demonstrated by Jones in a study of Merseyside shop floor workers[9] and by Fielder and Richmond in their report on an experiment in group admission to the OU involving students with low qualifications.[10] One important lesson to be drawn from these studies would seem to be that regular meetings enabled students to gain support from their tutors and also from fellow students with similar problems. Looking further afield one can also draw upon the experience of the University Studies and Weekend College programme at Wayne State University in Detroit.[11] Three out of four students attracted to this programme, which offers a Bachelors degree in general studies, are manual workers or in lower level white-collar jobs. The success of the programme can be attributed to four main factors:

1 A humanities-based curriculum which is designed to relate to a student's life experience.

2 A delivery system which takes education to the student. For instance, weekly workshops are held in places convenient for the student such as factories or union halls.

3 Students pay the full economic cost of their courses but many are entitled to educational benefits, either from their employer or from the government in the case of Vietnam veterans.

4 University officers have established close links with the main trade unions.

To achieve open-ness the OU must become more student-centred by removing as many as possible of the restrictions noted in Figure 12.1. There is clearly a need for greater publicity among the educationally disadvantaged. Many have not heard of the OU, or have inaccurate information. However, even with such knowledge the great majority will switch off at the mere thought of 'going to university' and others will become students only to drop out at a very early stage. For these people the OU must become more appropriate to their needs and more suited to their circumstances. Amongst other things this would involve changes in the curriculum, with courses being offered at lower levels, in a greater range of subjects and in ways which relate to and draw upon a student's life experience. Students must have a greater choice as to when, what and how they study. Educationally disadvantaged students should be offered a more supportive study environment to help them overcome the isolation experienced in distance learning. Further steps must be taken to ensure that people are not prevented from enrolling, or are forced to withdraw, purely for financial reasons.

Some recent developments within the OU are to be welcomed, including improvements in the counselling and preparatory study area, student projects, formative assessment, the encouragement of student self-help groups, low resource courses, increased financial assistance for students, and the provision of associate student courses, especially the short community courses. Further similar changes should be encouraged.

The Open University cannot hope to be all things to all men and a comprehensive, open education system for adults requires a national framework. However, this should not provide an excuse to sit back complacently waiting for the millennium. Either on its own, or in collaboration with other institutions, the OU should be striving towards greater open-ness now. During a time of financial cutbacks this will provide challenges just as great as those faced in the first ten years and will require innovatory solutions.

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13 Individual and Group Performance

INDICATORS OF PERFORMANCE RELATING TO STUDENTS AND STAFF

David Bethel Leicester Polytechnic

Earlier papers have discussed resource utilization and mechanisms for developing indicators of performance. I will attempt to relate these approaches to staff and students by drawing primarily on my experience of one polytechnic, so providing something of a case study from which I hope to draw out general principles.

THE DESIGN PROCESS APPLIED TO INSTITUTIONS

I begin with an assumption that every institution must have objectives, which must be as clearly defined as possible; that to attain these objectives there must be a strategy· that this strategy must be known throughout the institution; and that every managerial decision must be demonstrated as implementing the strategy. In other words, each institution needs to be subjected to the design process, which is the art of reconciling a complex of factors drawn from competing disciplines. One necessary element is the formulation of a prescriptive model; one essential feature is that value judgements are made by reference to criteria or standards. The design process begins with a need to be satisfied which cannot be done automatically and which requires the means to overcome the obstacles and constraints. Overcoming them first requires their identification then an analysis of the options and competing factors. Often these include a range of data derived from strict numerical calculation, the benefit factors available and the limits of persuasion of the manpower involved to accept policy decisions from which action will derive.

As in any other design problem, no institution is likely to meet its objectives unless the designer has developed the brief, has detailed a specification for implementing the solution and gained the confidence of the team that will realize the product by the process chosen. 'Confidence' implies that the team feels capable of working towards the successful completion of their tasks, that they believe in the correctness of the design process chosen (ie the prescriptive model) and have confidence in the designer and management successfully to realize the objective. If there is a difference between accepted management theory and design management, it is that the latter makes two overriding assumptions: that the end product will be aesthetically satisfying (and this is not the place to define or discuss aesthetics); and that those involved in the realization of the product will identify themselves with success and be motivated by this in their work.

CONFIDENCE AND CHANGE

The first general principle is that, in order to gain the co-operation of those concerned in any enterprise, the management (however defined) must establish a climate of confidence. This cannot be created overnight but is created over a period of time during which either the enterprise appears to be generally successful or the management appears to have taken the right decisions but has been frustrated by factors beyond its control. But without a climate of confidence, it is unlikely that an enterprise or institution will be efficient or effective in working towards its objectives.

Institutions used to planned change to effect efficiency and improvement in performance will be able to react most positively to further change, even when the nature of change is different in character and objectives from that of the past. It is unlikely that an institution is either efficient or effective unless it has developed a well-used mechanism to effect change to produce added value. My second principle then is that the more efficient an institution is, the more likely it is to be used to change and to meet change with confidence. At a time when the objectives of change are likely to be different, or even the opposite in some respects to change in the recent past, this is important.

POLICY DETERMINATION

A climate of confidence together with well-established mechanisms to effect change are the prerequisites for introducing new indicators of performance which will be accepted and subscribed to by those concerned. Ideally, in such a situation, the initiatives for change will not all emanate from the top but will emerge from various different levels. Here the differences between the hierarchical structures of the British universities and polytechnics can lead to different styles in determining indicators of performance, implementing the systems required to measure them and taking the action needed to effect improvement. At Leicester Polytechnic we have a well-defined hierarchy of authority through a committee system with executive decision-making powers at different levels for defined purposes. A wide range of ex-officio and elected staff and students are involved in executive decision making. The academic board determines broad policy, the faculty boards implement policies in ways which best meet the needs of different faculties; the schools find legimate ways to vary the policy where necessary; and the boards of study and examination boards for each course make policy within the broad framework handed down.

This system of policy determination allows for initiatives at and below institutional level. Characteristically, the academic board formulates institutional policies on, to cite various examples, staff development, a cohort analysis of all students, a quota system for the distribution of overseas students, a system for the analysis of student applications and admissions, a policy for continuing education and an analysis of the work of the careers and appointments service, all of which impinge on indicators of performance and affect the daily lives of staff and students. The levels of decision making below academic board are free to interpret the policies in ways which best meet their needs.

CRITERIA FOR NEW COURSES

I will illustrate how one indicator of performance was identified, how policy was effected to introduce a mechanism to measure performance, and how this affected staff and students. At a meeting of the academic board in December 1977, the recommendations of the academic development committee on new course proposals (emerging from the schools and considered by the relevant faculty board) were submitted, and caused the academic board to call for a review of policy on the criteria for new courses. A paper on 'Polytechnic Courses: Criteria and Policy' was accepted at the February 1978 meeting of the academic board and became policy. The five faculty boards were then instructed to ensure that all existing courses and any new proposals met the criteria. As the criteria included questions about levels of courses, modes of attendance, teaching method, market research, student needs, the place of research and evidence of need by industry or other relevant employment, all teaching and research staff had to review their attitudes to courses and, by implication, their roles. The students, through their membership of the academic board, the faculty boards and boards of study for each course, had an opportunity to re-think their objectives. Among the results of this exercise were a re-examination of the polytechnic's role in continuing education - a shift away from full-time and sandwich degree courses to part-time postgraduate and sub-degree courses; an increase in short full-time refresher courses for those already in employment; and lunch-time seminars for managing directors. Perhaps even more important, there was a significant increase in staff use of the Educational Technology Centre's 'Tutor's Self-Evaluation Questionnaire', its 'Student Feedback Questionnaire', and the library's self-directed study facilities. The next stage will be to try to evaluate the results in terms of their effect on student wastage rates. If the criteria for courses are correct and we match students to the right courses and set up the appropriate learning systems, the wastage rate, which is already lower than the national average, should drop even further.

ROLES OF STUDENT SERVICES

It is all too easy, having set up student services with terms of reference appropriate at one time, to overlook that their development may not match the direction in which the institution is moving, or that the intelligence the services are amassing is not being drawn upon fully. The services for student health, student counselling and welfare, student accommodation and careers and appointments at Leicester Polytechnic are co-ordinated in an informal way by an assistant director. His objectives are to ensure that their staff are aware of academic policy and can feed into it any findings they have which might modify or enhance policies. The incidence of particular ailments of students in particular courses, the effects on the academic performance of certain kinds of students of their residential accommodation, the effect of a sandwich placement on students with particular psychological traits, and so on are all of importance to admission tutors and course designers. Every factor needs to be woven into a strategy which is concerned to improve the performance of the individual students and, cumulatively, of the institution.

Underlying my example of relating a function of the work of the student services to academic objectives are various assumptions. These include (i) that, given constraints in resources which will set a maximum number of student places for each course, the institution will seek to admit the student intake most likely to benefit from and succeed on the course; (ii) that the indicators of successful student performance are complex and are not simply based on prior academic performance, but stem from an admixture of entry qualifications, the maintenance of psychological and physical health to sustain particular study, modes of learning and teaching, and the confidence of the student in the effectiveness of the course to match his objectives. The student services are not only a support system for the students but are a source of management information which, if used intelligently, can refine both student admission criteria and course design.

NON-ACADEMIC STAFF ROLES

In an institution, such as a polytechnic, where we are concerned to maintain a comprehensive range of courses at postgraduate, degree and sub-degree levels by all modes of attendance, part-time, full-time, sandwich and block-release, the importance must be recognized of the role of the non-academic staff in contributing to institutional performance, and they need to be included in the communication/consultation system and benefit from incentives. It is necessary for all members of the enterprise to know its objectives in order fully to relate role to strategy, and to understand how the system works so that those with ambition to do so can expect to develop a career. The teaching staff at all levels must understand and value the work of the support staff, primarily to enable them to appreciate that teaching is but one input into the educational process. Technicians, librarians, student services staff and administrative staff all have important roles, and all need to appreciate how they sustain the academic processes.

I will draw as an example from some aspects of the work of the academic registrar. There are differences in the needs of students on courses at different levels - postgraduate, degree and sub-degree work; there are differences in the needs of students who attend full time, or in various part-time ways or by sandwich courses. The teaching staff will not necessarily be aware of these differing needs. The academic registrar's role is two-fold. Firstly, to administer admissions and examinations and to service boards of study etc, and, secondly, to collate the collective experience and data of the academic effort and to analyse this in ways which expose appropriate and less appropriate practice. This work can highlight the problems of credit transfer, of a diploma student's promotion to degree course and vice-versa, of the changes in admission patterns required to improve wastage, and so on. It must include the setting up of data systems to monitor the effectiveness of the academic processes. At a time of development, the outcome of this work can guide academic board policies by indicating where enhanced resources will need to be placed if particular courses are to be developed successfully. Equally, at times of contraction, it can guide the academic board to relinquish those courses which the institution is not eminently well placed by its track record to pursue. In other words, the work of the registry, if designed as both a functional and research unit, will develop indicators of performance which are equally important in times of development, standstill and contraction. The idea of identifying strengths and exploiting them only in times of contraction is not good management: each institution needs to be aware of its strengths and weaknesses at all times and to be constantly seeking to take appropriate action to improve performance.

ACADEMIC STAFFING AND A STRATEGY FOR CONTRACTION

The total staffing costs in Leicester Polytechnic represent 66 per cent of the gross budget and 93 per cent of the net budget and clearly it is these which must take a high share of reduction in any significant contraction of the institution. We need a contingency strategy to meet contraction if it comes, but I question whether this need differ in essence from a proper strategy for growth if the latter is based on a system of indicators of performance. If the contraction is sudden and of a significant size, it will certainly call for new approaches, but if contraction is orderly over five years and, say, of the order of 15 per cent, then I believe the strategy for growth is capable of being used for contraction. Our staff development scheme has operated for some five years. There are agreed criteria for the promotion of staff, for the transfer of lecturers grade II to senior lectureships, for the appointment of professors, heads of schools, readers, course leaders and subject leaders. Promotions and appointments involve the documenting of the activities of all staff under indicators of performance headings. For teaching staff these include subject knowledge and scholarship; teaching activities; course tutorships, course development, laboratory/studio responsibilities; general administration; contribution to external relationships and commitment to the polytechnic. The Staff Development Policy is to improve current performance, prepare staff for changing duties, prepare staff for advancement, to enhance job satisfaction and to encourage personal development. Staff have a right to an annual personal development discussion and to an agreed personal development programme. The results of this policy have been manifold. The annual rate of academic staff change is around 7 per cent: some have left for industry; some have been seconded to industry; some have been seconded to re-training programmes usually leading to a higher degree; promotion to reader is now on a 3-year term; the research income from outside sources escalated to around £1 million currently which allowed more staff to be engaged wholly on research; new self-financing centres were formed - the Small Firms Centre, the Fault Diagnosis Centre, the Urban Studies Centre - to which existing staff were seconded; and some staff found they had abilities previously untapped which have led them to promotion posts in other institutions. A few staff have applied for and been granted early retirement; others have been prepared for early retirement over the next few years. This was achieved in a period of development and growth and I see little need to alter the policy to meet other than savage contraction. I do expect that we will refine the Staff Development Policy and will need to increase our efforts to create other self-financing services in order to improve our service to industry, commerce and the professions. Fortuitously, this will also help us to meet any contraction of the teaching service without undue disruption or very painful decisions.

PERFORMANCE INDICATORS AND THE BINARY SYSTEM

Any attempt to introduce common indicators of performance across the binary line must take in some anomalies and difficulties which we have exposed. Firstly, the method of calculation of full-time equivalent students (FTEs) wished on the so-called public sector is disadvantageous compared to that used by the University Grants Committee (UGC). A sandwich student is counted as 0.9; a part-time student attending, say, one whole day and one evening is counted as on average 0.33; an evening-only student is counted on average as 0.15. I understand that in a university, a part-time student may be counted as about 0.5. This anomaly is a disincentive for staff to develop part-time courses and the resulting FTEs are used as an indicator of performance. Our Australian colleagues present will know that in their country part-time students in both the universities and the colleges of advanced education are counted as 0.5. In developing a distance learning scheme to update graduate pharmacists, with the encouragement of the Pharmaceutical Society of Great Britain, it is almost impossible to gain credit for the 900 students poised to enter the course. The second anomaly is that, even by using the full discretion allowed in the Burnham Report which sets the salaries and gradings of the public sector teaching staff, a polytechnic may only have about 25 per cent senior staff, ie professors, heads of department, readers and principal lecturers, whereas under the UGC dispensation, a university may have 40 per cent equivalent senior posts. This is a disincentive for polytechnic staff to improve their performance. A third anomaly stems from the different methods of funding on the two sides of the binary line. The latest example is the setting of so-called full-cost fees for overseas students. The universities are set minima, the public sector is set standard fees at some £200 above the university minima. The standard fee approach can hardly be an indicator of performance, yet for halls of residence fees, the public sector institutions are required to charge the actual costs to overseas students.

INDIVIDUAL STUDENT AND STAFF PERSPECTIVES

So far, I have been trying to relate indicators of performance to staff and students mainly from an institutional viewpoint, stressing that a strategy is required and illustrating how aspects of one strategy work. I now turn my attention to staff and students from a less institutional viewpoint.

Firstly, there is a generation gap between most staff and most students. This is likely to lead to different perceptions of the role of higher education and of the values attached to the performance of students by themselves and by the staff. Any acceptable indicators of performance need to take such aspects of student-staff relationships into account.

Secondly, and quite a different matter, which will need to be brought in to any institutional strategy, there are implications for staff and students in higher education in a society where most people enjoy increased leisure. This is not a new phenomenon. At the turn of this century the average working week was about 58 hours, whereas it is about 40 hours now. Between then and now the working week for both staff and students in higher education has increased on average. But given that it is likely that neither students nor staff in particular will agree to being perhaps the only section of society not to enjoy more leisure, our perception of performance now must be reviewed for the future. For polytechnic staff, many of whom enter teaching with characteristically five years in relevant professional employment and are encouraged to update their application of knowledge by returning to outside employment, the differences between academic life and life outside will become more apparent. It may be that this problem can be solved by accepting a differential in salary between what teachers receive in higher education and what they expect in outside employment coupled with a requirement to undertake consultancy research and remunerative relevant experience with institutional backing in the use of facilities. This might then lead to a choice of a life-style rather than an expectation that teaching per se will bring comparable financial rewards.

Thirdly, since the age of majority was lowered from 21 to 18 years, most, if not all our students are adults in law. If we add to that factor that only 40 per cent of all polytechnic students are admitted direct from secondary schools (in the universities it is 77 per cent) and that only 27 per cent of all polytechnic students are under 19 years of age on admission (65 per cent in the universities), then it can be assumed that the relationship between the institution and the individual student has changed in the past decade and is likely to change further. The changes indicate that admission constitutes a contract in law between the institution and the individual. Relationships between staff and students and the institution will develop and change if the present trend of admitting more mature students continues and this will alter some of the indicators of performance that we are now formulating. We should not forget that, although the quality of the educational experience of the student is related to the quality of the staff and the ethos and objectives of the institution, the prime purpose of all our efforts is to improve the students we admit to our institutions. Their perception of us and, later, their employers' perception of us is more important than our self-perception.

It follows that one indicator of performance in higher education may well be the interest of the institution in, on the one hand, the secondary and further education given to our students and, on the other hand, their performance in employment after graduation. This latter point only serves to indicate that our careers and appointments services and industrial liaison units, where these exist institutionally, have an important input to the development of indicators of performance.

Clearly, the students must have confidence in the institution at application stage. We need to ensure they maintain it in ways which promote their quality and motivation to succeed. This suggests operating a clearly defined method of student assessment linked to the mode of learning and teaching employed.

CONCLUSIONS

The most important objective for each institution is to create a climate of confidence: confidence within the institution itself for its processes and outcomes, confidence in the outside world for the institution. The more efficient and effective our institution is in a period of development, the more it can meet standstill or contraction and not lose its self-confidence, standards and dynamic. A strategy of management is required and this must be subject to periodic review. To perform at their best, staff and students require a sense of security: by security I do not mean lifelong tenure for staff or guaranteed success in examinations for students, but knowledge that the indicators of performance are just, appropriate and equitable and that the system is designed to assist them in meeting their targets.

14 Individual and Group Performance

EVALUATION OF AN INSTITUTE FOR UNIVERSITY TEACHING AND LEARNING

L. R. B. Elton University of Surrey

INTRODUCTION

Some time late in 1966, the Philips Company made an offer to the University of Surrey of a benefaction of £50,000 to establish a closed-circuit television system on the new university campus at Guildford and to support research in educational technology, provided that the university established a research chair in educational technology. It proving impossible for the university to finance such a chair, I made an offer to the vice-chancellor, Dr. Leggett, to change my research field from theoretical nuclear physics to educational technology, while retaining my post as head of the Physics Department, provided I was free to define my research area within educational technology. This compromise was accepted by the Philips Company and so the Institute for Educational Technology was established in March 1967, with the aim 'to develop teaching methods and teaching aids, with special reference to problems in the University and sixth form'. The expanding work of the Institute forced me in 1969 to seek permission to resign from the headship of the Physics Department in order to become full-time head of the Institute. After a searching investigation by a senate committee, the Institute was established on a permanent basis, initially with three full-time staff. The committee further resolved that 'the Institute has an important function to play within the University inter alia in seeking to effect improvements in teaching methods and student assessment and in reducing the failure rate', thereby adding a service function to the earlier research and development function.

Over the next few years, as university expansion slowed down, the process of resource allocation in the university as a whole - staff, space, equipment and consumables - came increasingly to be based on a count of full-time equivalent students. In consequence the Institute, which had only a small undergraduate teaching function, found itself involved in somewhat absurd discussions, which at times became acrimonious, and in which vain attempts were made to squeeze the Institute's square peg into the round hole of the university formula. Eventually the vice-chancellor, Dr Kelly*, proposed to me privately that the best way to resolve this situation was for the Institute to be externally evaluated and its resource allocation after that to be based on the actual work recommended in the light of the evaluation.

The present paper will describe this evaluation and its results. It is written in the form of a case study, an approach which has previously been advocated for educational evaluation (Macdonald 1975) and which is being used here to evaluate an evaluation. I am fully aware of the difficulties in describing a case in which I was so intimately involved, and I must leave it to the judgement of others to evaluate how far I have overcome these. In a final section I hope, in the words of Macdonald and Walker, 'to reveal properties of the class to which the instance belongs.'

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* Dr. Kelly succeeded Dr Leggett as vice-chancellor in 1975.

THE EXTERNAL COMMITTEE

The vice-chancellor put his proposal for the external evaluation to me verbally at the beginning of October 1976. I replied on 19.10.76:

> 'I have been thinking of your proposal and the more I think about it, the more I am sure it is right. I envisage it as a committee which would be supplied with a certain amount of documentation and which would then visit the IET for ½ - 1 day. After that it would make a report to yourself. Such a committee should, as you said, have a Chairman of prestige.... It must also have a few expert external members and one internal one.'

In due course the vice-chancellor sent out a letter of invitation and all those invited, accepted.*

The letter included the following indications of the purpose of the committee:

> 'We are presently considering the long-term development of the Institute, over the next five to ten years, in the light of its achievements to date.'
>
> 'What we have in mind is that the group might look at the record of Professor Elton's achievements, and to comment for us on his future plans.'
>
> 'Since neither we, nor other universities, are used to the concept of a research institute carrying out work of this nature, we believe that you can help both us and other institutions were you able to indicate criteria by which the work of an Institute for Educational Technology might be judged regarding its quality of performance. In addition, it would be most helpful if you were able to make any comments on resource allocation appropriate to such an institute.'

The Committee received from me a document of 25 pages on the IET in January 1977. It held a meeting in London in early February and it visited the university on 28.2.77. During the morning it interviewed individually six staff who had been selected by the vice-chancellor to present departmental and university views of the IET and it was timetabled to visit the IET from 14.00 to 18.00. Unfortunately, it arrived 30 minutes late and some of the members had to leave at 17.30, thereby missing the sherry reception to which a number of staff from the university had been invited who had made extensive use of the services of the IET. Because of their late arrival, the committee also omitted the planned tour of the IET.

There is no doubt that staff and students of the IET felt that the visit had been rushed and in consequence I submitted a further paper to the committee for its next meeting, on 3.5.77, and declared my readiness to attend. That this feeling was not shared by the committee is indicated by the fact that my offer was not taken up, which influenced the attitude of IET members towards the committee and caused me to take the action described in the next section.

The committee presented its report to the vice-chancellor in June 1977 and I received a copy from him. As he decided to treat the report as confidential to himself, I am not able to comment on it here in detail, but I can describe my reactions, which are vivid in my memory and documented in my notes at the time.

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* Prof. P.J. Black (Chelsea College) (Chairman), Mr. G. Hubbard (Council for Educational Technology), Lord Ashby, Professor W.D. Furneaux (Brunel University), and Professor O. Pick (Dean of Faculty of Human Studies, University of Surrey).

I can also describe my present reactions, on re-reading the report after an interval of two years.

It is clear to me now that I over-reacted to some of the adverse criticisms. This may be natural, but I also believe that it was due to what I saw at the time and still see now as quite inadequate contact between the committee and myself during its investigations and deliberations. My attitude has changed far less towards some of its more detailed recommendations for the future, which I continue to see as based on serious misunderstandings, inevitable in so brief an investigation. I shall elaborate on these matters when I come to outline developments in the IET that stem from the report, but must first refer to the independent action which I took in summer 1977.

A POSTAL DISCUSSION

In July 1977 I initiated a discussion by post of the role of an Institute such as the IET and the conditions under which it could best provide a service to its university in the improvement of teaching and learning. My initial letter, which was sent to eight experts from seven different countries,* all of whom were acquainted with the work of the Institute, asked the following questions:

1 How important is it that an institute like ours should also conduct research in the field in which it provides a service?
2 If such an institute should conduct research, what should be its nature?
3 Turning to the Institute at Surrey and assuming that it should conduct research, what can be said about its past record as an indication of the quality of the work likely to support a good service?
4 Is such research appropriate to provide training for research students, and what form should such training take? For what sort of positions will they be qualified?
5 Which of the following are appropriate areas of service?
    (a) Pre- and in-service training
    (b) Advice to individual staff/students
    (c) Help with development of courses
    (d) Academic planning
    (e) Advice on the organization of teaching and learning in the university as a whole (two very different kinds of examples might be (i) the university examination system, and (ii) the provision and equipping of learning spaces)
    (f) Others
6 Is it possible to give some kind of priority order for the above?
7 What organizational or informal structures are most likely to lead to increasing use being made by the university of the above services?
8 What kinds of improvements in teaching and learning may it be reasonable to expect to take place over a period of 5-10 years? How high a proportion of the university may one expect to be involved?

---

* Dr Paul L. Dressel (Michigan State University), Professor W.H. McKeachie (University of Michigan), Dr G.O.M. Leith (College of Cape Breton, Nova Scotia), Dr M.L. Goldschmid (Federal Technical University, Lansanne), Dr Hans Jalling (National Board of Universities and Colleges, Sweden), Professor Peter Fensham (Monash University, Melbourne), Professor Ludwig Huber (University of Hamburg), and Professor Arye Perlberg (Technion, Haifa).

After two rounds of correspondence I was able to produce the following agreed answers, with dissents noted:

1 & 2 It is very important for the IET or any similar institute to engage in research. This should be largely applied and related to the service provided, but because far too little is generally known in the field of teaching and learning in higher education, appropriate excursions into basic research are also indicated. The need for an academic unit to do research and be seen to do research was also stressed. Hans Jalling made the interesting point that it would be possible for an administrative unit to provide the service without conducting research itself, but that this was not so for an academic unit.

3 The overall reply could be summarized by 'favourably impressed'.

4 There was general agreement, except possibly from Hans Jalling, that an important function and responsibility of the IET should be to turn out people who could staff similar units, and that this should be achieved through appropriate research training, supplemented by courses and seminars. Both Hans Jalling and Paul Dressel warned that it would be inappropriate to take on graduate students who were primarily interested in basic research or in specific disciplines.

5 & 6 While all the topics listed were suitable, the first three should have priority, probably in the order listed.

7 There was a definite bias towards informal structures. The need for firm support from the top - vice-chancellor, deans, heads of department - was also stressed.

8 It was generally agreed that progress was not likely to be spectacular under existing circumstances in most institutions. Marcel Goldschmid drew attention to the close relationship between progress in the improvement in teaching and learning and the need to improve the context in which units such as the IET work in their institutions.

I communicated the above to the vice-chancellor on 27.9.77.

THE UNIVERSITY ACTS

The vice-chancellor, the academic registrar, myself and the dean of my faculty, Professor O. Pick, met on 17.10.77 to discuss the two reports, and as a result the vice-chancellor put a number of recommendations to senate in February 1978, all of which were accepted (Appendix). These may be compared with the conclusions of the Delphi exercise as follows:

1 & 2 The university agrees with the majority view.

3 The university also made some complimentary remarks about the past record of the Institute.

4 The university expressed some concern that the number of research students should be limited. It added the suggestion of a taught postgraduate course.

5 & 6 Complete agreement.

7 The university recommendation of an advisory committee is somewhat between the wholly formal structure of a management committee and wholly informal structures.

8 The university was not concerned with this question.

DEVELOPMENTS SINCE THE SENATE REPORT

I now want to outline the fate of some of the recommendations in the light of subsequent developments. An example of one which I originally resisted was for the appointment of a cognitive psychologist. I believed that we should cast our ne very much more widely in the social sciences. But we have now appointed a cognitive psychologist and I am happy to admit that I was wrong.

The criticism which it was most difficult for me to accept was that we were not providing adequate training for our research students and that we could not do this because our research lacked a fundamental component. I now accept this criticism, but not the accompanying recommendation that an institute such as the IET need not have a balanced research programme and indeed might be better without it. Instead we have made a number of 'appropriate excursions into basic research' (Elton 1977; Laurillard 1979; Gilbert and Osborne 1979) and are providing a formal research training programme.

The advisory committee has addressed itself to three tasks: to advise the IET on its role and work, to scrutinize and approve annually the estimates, and to advise the university in general on how to make best use of the services of the IET. My perception is that the committee is fulfilling the first two tasks well, but that in the third it is not significantly more successful than we were previously without it.

DISCUSSION

What conclusions can be drawn from our experience that are of more general applicability? The first is undoubtedly that an investigation of an organization, of the kind which the IET experienced, leads to a re-evaluation by the members of the organization of their own work, which on balance is beneficial and which without the external evaluation would not have taken place. As a result, we have for instance increased our service work at the expense of other activities, mainly research.

Conclusions concerning the direct effect of the evaluation are more complicated. There is no doubt that the manner in which it was carried out was felt to present a threat, and that this threat would have been less if the evaluation had been conducted more through consultation and less through interrogation. Which of these models is more appropriate must depend on the aims of the evaluation. If the aims are summative, ie mainly judgemental, then presumably the interrogative mode is appropriate; if the aims are formative, ie mainly to lead to improvement, then the mode should be consultative. To the extent that the vice-chancellor's original brief was to 'look at ... achievements ... and to comment on future plans', the aims seem to encompass both summative and formative aspects, and perhaps the lesson should be drawn that the aims of an evaluation should be much more explicitly agreed than was the case or indeed is common.

To the extent that an evaluation is formative, it should act as a positive change agent and we can look at it in terms of a theory of change such as that of Lewin (1961). According to this theory, it is necessary for change to take place so that there is an initial feeling of discomfiture with the present, as was indeed induced by the difficulties which had arisen in connection with the resource allocation for the IET. After that, everything should be done to reduce tensions by allowing members of the organization which is to undergo change to feel safe in making the transition from the old to the new. It is here that the judgemental mode, which increased tensions, proved counter-productive, even though the judgement in the end proved favourable, and it was not until senate had provided the necessary security by accepting the vice-chancellor's recommendations, that change became acceptable to IET members and then took place, although not always as originally suggested. The problem that remains is that these recommendations to senate presumably would not have been accepted but for the favourable judgement, and that this judgement would not have been credible if it had been obtained through a consulative approach to evaluation.

One way out of this dilemma might be to separate the two aspects of the evaluation. There would first be a summative evaluation, which would be interrogative and judgemental, but also entirely historical. Its purpose would be essentially to establish the level of future activity on the basis of past performance. When this had been agreed, the second stage of formative evaluation would follow, in which experience from the past would be used in order to make recommendations for the kind of activity to be pursued in the future. The mode of this second stage of the evaluation would be consultative. No doubt such a two-stage procedure will reveal new problems, but it is perhaps worth trying. At a time of zero or even negative growth evaluations of the kind carried out on the IET should perhaps be more frequent than they are.

ACKNOWLEDGEMENTS

My thanks are due to all who played a part in the case of which I have presented a study, for their courtesy, sympathy and help; above all others to Dr Kelly and Professor Pick.

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APPENDIX

Extract from Senate recommendations S78:16 for the future of the Institute.

1 The Institute for Educational Technology does not need a certain number of full-time equivalent students to justify its existence - it should provide a central service.

2 The Senate will set up an Advisory Committee chaired by a senior academic, with a representative from each Faculty. The remit of this advisory committee will be to advise the Head of the IET on all initiatives, to assist with his submission each year to the Estimates Committee; and to encourage and facilitate the IET's service role.

3 The Institute for Educational Technology is to be seen as performing a central service to the University in providing counsel, advice and planning of teaching and learning in higher education in which the emphasis is on the method of teaching and not the content.

4 It was agreed that some accommodation should be provided in the Institute

for Educational Technology for overseas visitors who do much to stimulate the Institute for Educational Technology and the University, and make the University well-known.

5 The Working Party recommended the appointment of a psychologist to the Institute in order to provide a proper theoretical background to its work.

6 The number of research students working for research degrees in the Institute for Educational Technology should be limited. For 1977/78 and 1978/79 it was agreed that there should be not more than 10 full-time postgraduate research students in the IET.

7 When the new course in Educational Technology, which is being considered, has been set up, then consideration can be given to another member of staff for the Institute for Educational Technology.

15 Individual and Group Performance
STAFF PERFORMANCE, PLANNING AND ASSESSMENT

L. J. Barker, B. J. Cameron and L. J. McNulty Darling Downs Institute of Advanced Education

In an exercise completed towards the end of 1978, the Darling Downs Institute of Advanced Education conducted a comprehensive organizational review[1] aimed at improving institutional efficiency and effectiveness. It was carried out in a systematic manner in which problems that prevented the achievement of the Institute's mission were carefully identified and ways designed to overcome them. One particular area was the utilization and development of staff.

In order to clarify the goals of individual staff members and ensure as far as possible that their goals were consistent with the mission statement of the Institute, documents termed the Staff Professional Profile (SPP) were drawn up to concentrate planning effort on those areas which in aggregate would be determinants of the degree to which the mission of the Institute was achieved. The areas covered are shown in Figure 15.1.

Those activities that fall into SPP areas 1, 4 and 5 are normally matters of public record; those in areas 2, 3, 6 and 7, however, remain as confidential as the staff member wishes.

The SPP provides a structure through which a staff member and the school dean mutually plan in terms of:

a) setting and modifying work aims and activities;
b) reviewing performance, achievements and problems; and
c) identifying individual staff development needs.

The implication of this approach is that there must be a regular review of aims/activities and performance in a dialogue. It both encourages and requires a spirit of honesty and openness from the participants.

Teaching responsibilities (SPP area 1) are determined by a process during which each staff member indicates his skills and desired responsibility level in each unit of the academic programme.

The process optimizes the allocation of staff and, as a basis for new staff recruitment or retraining of existing staff, identifies mismatch between existing staff expertise and the needs of the academic programme.

Each staff member is also encouraged to indicate in which units, with some redirection of his skills (either with or without DDIAE financial support), he would be able to make an impact in future. This information is used by deans in the context of requests for funds for staff development (conference travel, institute research grants, paid or subsidized absences on assigned duties, professional experience leave) and any discussions of SPP area 3 (Professional Academic Development).

The process enables data-supported judgements to be made whether a new staff member should be employed when a vacancy occurs, or whether the money should be invested in supporting the retraining/redirection of skills of an existing member of staff. This is a particularly important outcome of the process at present, when the current restrictions in resource levels can be expected to continue or even tighten further.

Figure 15.1 Staff professional profile areas

1 ASSIGNED TEACHING RESPONSIBILITIES	The staff member's assigned teaching responsibilities as they do or will appear on official Institute timetabling documentation, together with responsibilities for such activities as field trips and performances recognized as required components of the units.
2 PROFESSIONAL SERVICE TO INDUSTRY/COMMERCE/COMMUNITY a) Consultancy b) Research applied to specified problems c) Other professional service	Activities where the staff member's competence as an academic is brought to bear on problems which have their focus outside the Institute. Contributions to problem solving through consultancy work or applied research. Contributions to meeting the goals of professional associations. Contributions to cultural or continuing education activities in the general community.
3 PROFESSIONAL ACADEMIC DEVELOPMENT a) In an initiating role: (1) Conference presentation (2) Research (3) Publications b) In a recipient role: (1) Course/conference attendance (2) Professional extension, including private study and reading (3) On site observation/discussion	Activities which benefit scholarship and the international academic community and/or the staff member himself as an individual professional academic, whether his role is as an initiator or as a recipient. Where the staff member plays a recipient role, such activities should be of recognizable benefit to the Institute.
4 ORGANIZATIONAL MANAGEMENT	Contributions to Institute and School Management Committees together with assigned administrative responsibilities of a managerial nature.
5 ACADEMIC PLANNING AND DEVELOPMENT	Contributions to Institute and School Academic Committees together with assigned involvement of an academic nature in planning and reviewing programmes/courses/units.
6 STUDENT SUPPORT	Participation in the Student Advisory Scheme and in student gatherings, informal contacts, non-required field trips, tours, and promotional activities.
7 SERVICE AS A MEMBER OF THE COMMUNITY	Contributions to the general development or welfare of the community, including membership of parent bodies, service clubs, voluntary welfare organizations, etc.

The discussions between a staff member and his dean on SPP areas 2 - 7 lead to a simple register of aims, and to activities being selected that are agreed to be the most effective methods of meeting these aims and overcoming the difficulties inherent within them. If the plan is to work, it must deal with issues and actions that can be implemented.

The process of discussing and completing SPP documentation is an iterative one. A loose-leaf format has been adopted with the intention that it will facilitate change, and, during the course of the development and agreement phase of the process, permit the maintenance of current statements of proposals, commitments and performance.

At its present state of development, the SPP places no reliance on 'objective' measures of performance because 'correctness' of measurement is considered less important in its impact on organizational functioning than is the process of arriving at a joint evaluation of performance by the staff member and dean.

As Balderston[2] points out: 'Universities are more attuned to their processes and their mechanisms than they are to their consequences.' This is also true at the DDIAE, although increasing attention is being paid to quantitative and qualitative evaluation of the Institute's performance.

At this stage further emphasis on specific outcomes and measurement is not expected to make a useful contribution to the efficiency and effectiveness of the Institute. There are no clear cut answers as to which specific outcomes should be measured or how they should be applied. In this respect, Keeley[3] has discussed in some detail the problems of 'evaluating individual performance in situations where concrete criteria are difficult or impossible to establish', such as in post-secondary education. As he points out, the tendency for evaluators to shift from empirical to social criteria in such cases is well documented and poses problems for the application of a management-by-objectives scheme. Evaluation within the SPP procedures at DDIAE remains subjective and a joint effort.

PROBLEMS AND BENEFITS

The following key problems were identified during the introduction of the SPP scheme in 1979:

1 The development of such a programme requires the real and extensive involvement of staff to ensure interest, acceptance and commitment. The necessary explanations have been time-consuming and in most instances have been concerned with the political and personnel aspects of the scheme. However, in many instances staff members have been eager to plan their activities in order to remove uncertainties and to take advantage of the opportunity presented to demonstrate success.

2 A clear need has emerged for supervisory staff (particularly senior staff) to be trained in personal interviewing skills.

3 Planning was seen by some academics as a threat to their freedom to practice their profession without interference. It is doubtful if this perception will ever be removed, particularly in the case of those staff members who have a tendency to use political bargaining as a tool to achieve the goals they hold to be important.

4 It is essential that the SPP should be seen only as one element within a total programme of staff training, development and assessment. This requirement has proved to be difficult to meet during the development stage of the scheme where articulation of incomplete procedures tends to be confusing.

5 A significant percentage of staff saw the documentation as too formal and a reflection on their integrity.

At this stage, the following major benefits have emerged:

1 A more effective usage of the human resources available to the Institute has become apparent.
2 The problem of workload equity has been better handled than in the past.
3 Teaching assignments are a matter of public record and have been determined on a basis of matching needs with available skills across the Institute.
4 Personal impediments to improved performance have been identified and discussed in a structured, less threatening situation and agreed corrective actions have been determined.
5 The need to develop, implement and review a comprehensive staff development scheme has been highlighted and some modifications to the future directions that the programme should take have been determined.

CONCLUSIONS

On the basis of the experience gained so far, it is unlikely that 'objective measures' will feature strongly in the scheme's further development. The planning aspects of the scheme show great promise and will become more important as impacts of the decreasing resource levels take further effect. The discussion and recording aspects of the work have a potential for further performance improvements without the imposition of rigid outcome achievement targets.

The scheme is pragmatic, process-centred and based on agreed aims, together with planned actions. It is considered that this is the maximum degree of structure that an institution such as the DDIAE can have imposed upon it with positive benefit. Further movement towards outcome-based work and evaluation programmes will await unambiguous evidence that such programmes will produce positive benefits.

NOTES

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2 BALDERSTON, F.E. (1974) Managing Today's University San Francisco, Jossey Bass Publishers.

3 KEELEY, M. (1977) Subjective performance evaluation and person-role conflict under conditions of uncertainty Academy of Management Journal Vol 20, No 2, pp. 301-314.

STUDENT REPORTS AS INDICATORS OF INSTRUCTOR PERFORMANCE

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Student reports or 'evaluations' of instructor performance continue to have a significant role in higher education in the United States. While research has revealed relations between student ratings of instructor performance and a number of student and situational characteristics, little attention has been given to the possibility that report/evaluation forms themselves constitute a variable affecting reports on instructor performance.

Our analysis of student report forms shows that they do differ with respect to logic, meaning, and utility. That is, report forms show significant differences in 1) conceptions of teaching from which items and item categories are derived; 2) conceptions of measurement which imply the response modes, language, referents, and judgements required; 3) interpretation of results through scoring mechanisms and discriminations considered important; and 4) usefulness of results for instructional improvement and decision making.

On the other hand, standard report/evaluation forms contain a number of items which can be classified in common categories, into groupings of items which may be used to gather information about a particular element of instructor performance. For example, items which commonly can be found on report forms include those concerned with instructor objectives, workload, feedback, and various types of instructor-student relationships.

The process of comparison suggests that if forms are identified which differ in logic and measurement techniques but which contain items in common categories, and if basic elements in the various forms are selected for comparison, then continuities and discontinuities can be determined. This can be done through using different report/evaluation forms in the same sections of a class taught by a given instructor. The continuities and discontinuities in the results obtained may then be used to make judgements about the forms as indicators of instructor performance.

In this paper we address the following questions:

1 Are items interpreted the same way by experienced judges and by students?
2 Do students take into account the same performance factors when arriving at overall judgements when using different forms?
3 Are instructors evaluated the same way on different forms?

METHOD

Three student report/evaluation forms were used in the study: the Student Instructional Report (SIR) (Centra 1972), the Instructional Development and Effectiveness Assessment form (IDEA) (Hoyt and Cashin 1976), and the Teaching Assessment Program form (TAP) (Johnson, Rhodes, Rumery 1975). These forms were administered to random thirds of 1040 students taught by 17 instructors in two universities and two community colleges.

In addressing the first question, items in the three report forms were sorted independently by two judges (experienced instructors) into analytic categories. That is to say, items which appeared by consideration of the language to gather information on common topics were grouped together. These categories were reviewed by five additional judges, revised, and finally checked against the perceptions of students in a postgraduate class in post-secondary teaching, themselves instructors. The response data from the three forms was subjected to factor analysis.

In approaching the second question, multiple linear regression analysis was applied to response data from the three forms with items representing common analytic categories as independent variables and global evaluative items as dependent variables. There was considerable variation among forms in the analytic categories contributing significantly to composite predictors. For IDEA, items in the categories Clarification Techniques, Intellectual Stimulation, Objectives, Class Management, Workload, and Student Thinking made significant contributions to the prediction of global evaluation. The relative contribution in each category was in the listed order.

For SIR, items in the categories Class Management, Objectives, Workload, Clarification Techniques, and Intellectual Climate contributed significantly to prediction of global evaluation in the listed order. For TAP, items in the categories Class Management, Intellectual Stimulation, Student Thinking and Feedback on Performance contributed significantly to the prediction of global evaluation with weight in the listed order. Only items representing the category Class Management were among those contributing significantly to global evaluation on all three forms.

In approaching the third question, mean ratings on items in the several categories were transformed to ranks. Consistency among rank orders was then assessed with the use of Kendall's Coefficient of Concordance.

CONCLUSIONS

We conclude that the student report/evaluation forms are themselves a significant variable affecting the manner in which instructor performance is described and judged. The indicators of performance provided by any form are a function of respondents' interpretation of linguistic information in the form, particular instructional acts designated for observation, and prior conception of the import of those acts. Forms vary in the wording used to gather information about performance factors, and this language is subject to varying interpretations by students and instructors. The forms vary with respect to the performance factors which are included and the emphasis given to each. Those aspects of instructor performance considered important by the authors of one form may be ignored or minimized by others. Students and instructors also differ in the importance they may attach to various performance factors. With the possible exception of their responses to instructors who elicit considerable dissatisfaction, students' judgements about the relative merits of instructor performance are often quite inconsistent from form to form.

When combined with the results of other studies on the effect of instructional report/evaluation forms, our findings suggest that these forms are rarely, if ever, adequate as indicators of instructor performance. They may in fact be better described as indicators of student satisfaction. Their use as the basis for either instructional improvement or personnel decisions is highly suspect.

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17 Individual and Group Performance

STUDENT PERCEPTION OF LECTURERS AS DETERMINANTS OF PERFORMANCE

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INTRODUCTION

The question of the successful prediction of academic performance is one which has occupied the attention of researchers for many years. Early work on the subject (eg Garrett 1950) focused primarily upon intellectual and ability factors as predictors. Later there were important shifts in emphasis. Firstly, the consideration of students' personality characteristics, particularly with respect to motivation (eg Dunham 1973), assumed importance. Secondly, there was gradual recognition of the fact that some students perform better and some worse than predicted by ability or personality measures alone (eg Cronbach 1957). This led to a conceptualization of academic performance in terms of the interactions that occur between aspects of a student's personality and the academic environment.

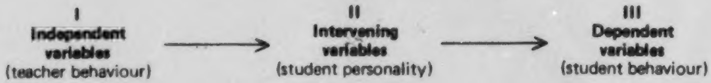
More recently still, attention has been turning from the simpler issue of prediction to the more fundamental question of the predictors being determinants of performance in a causal sense. The use of path analysis as a means of testing the validity of causal models has enabled researchers to explore the causal relationships that may exist amongst an array of predictor and criterion variables.

The aim of this study is to investigate the relationships that may exist amongst such an array of predictor and criterion variables in the tertiary setting. The study focuses attention on two of the basic elements in the teaching-learning process: aspects of the personality of the student, and characteristics of the lecturer as the student perceives them.

THEORETICAL FRAMEWORK

For the purposes of this research, the teaching-learning process is conceptualized as a form of social interaction in which two or more persons serve alternately as stimuli to one another. Smith (1960) conceived of the teaching-learning process as a series of interactions between the educator and the learner. In them there are three categories of variables: independent (teaching actions), intervening (learning actions), and dependent (pupil actions). Smith's paradigm is depicted in Figure 17.1. In this model the arrows indicate the direction of causal influences.

Figure 17.1   A pedagogical model (Smith 1960, page 234)

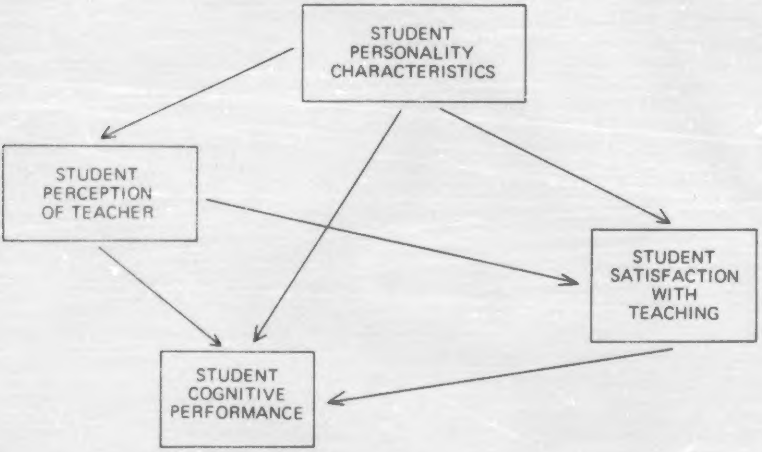


In Smith's model the teacher's behaviour is perceived by the students in terms of their own personalities and cognitive characteristics. These characteristics are involved as intervening variables which govern the response in terms of acquired knowledge, skills and modified attitudes which a student may display.

For the purposes of this research, Smith's concept of such interaction has been interpreted in terms of a linear and additive causal model, implying that student personality factors may influence student cognitive performance when the student is subjected to the stimulus of the teacher's behaviour. The question which arises is whether a student's personality factors have any significant influence on performance in their own right.

Thus, student personality factors influence student performance directly, and indirectly through the student's perception of the teacher's behaviour. This indirect influence is a product of the interaction of student personality and teacher behaviour. However, the teacher's behaviour was not assessed in this investigation, and has been deleted from consideration. Furthermore, in keeping with Lewin's (1935) field theory, the attitudinal variable called satisfaction with teaching (SATTCH) is viewed as a final mediator of the causes of student cognitive performance. The causal model which forms the theoretical basis of the investigation therefore takes the form shown in Figure 17.2.

Figure 17.2 General causal model for teaching-learning as social interaction


STUDENT PERSONALITY CHARACTERISTICS
STUDENT PERCEPTION OF TEACHER
STUDENT SATISFACTION WITH TEACHING
STUDENT COGNITIVE PERFORMANCE

METHOD OF ANALYSIS

The evaluation of the general causal model was carried out using parameters which had emerged as meaningful explanatory variables (> 2.5% criterion variance explained) in an earlier study (Fearn-Wannan 1977). Specific causal models using these explanatory variables were developed on logical grounds, the structural equations, describing the relationship within the models, were derived. These equations led in turn to the estimation of path coefficients. Using the technique outlined by Alwin and Hauser (1975), the general effects of the causal variables were then differentiated into direct and indirect effects.

Two aspects of student cognitive performance were considered in this investigation: lower cognitive performance, which is the exercise of memory, and higher cognitive performance, which is the performance of higher level tasks requiring the mental manipulation of data, eg interpretation, application, analysis, etc.

Three non-cognitive student variables emerged as meaningful predictors of higher cognitive performance in organic chemistry in the earlier study: non-involvement (negative), conscientiousness (positive), and achievement motivation (positive). Since these variables were shown to be orthogonal (Fearn-Wannan 1977, page 111), they can be regarded as exogenous variables (ie first-cause variables) in the model. Student-orientation (positive) was the only perceived lecturer variable to emerge in the earlier study as a meaningful contributor to variance in higher cognitive abilities in organic chemistry.

A similar model for lower cognitive abilities in organic chemistry was also constructed.

In setting up these models no cognizance has been taken of the fact that significant interactions amongst student and lecturer variables had emerged in the earlier study (Fearn-Wannan 1977). It is recognized that this gives a slightly distorted picture of reality, but it will permit the use of path analysis rather than the much more complex statistics required to cope with non-additivity. The advantage of this is that the relatively simple mathematics of path analysis will enable more variables to be built into the model than would otherwise be possible. Furthermore, some researchers (eg Walberg 1975) claim that interactions are probably the results of scaling deficiencies and are not replicable relationships.

RESULTS

The path coefficients, which are the standardized partial regression coefficients of the predictor variables, were calculated, and these are set out as the causal model in Figure 17.3.

Using Alwin and Hauser's (1975) technique, the direct and indirect effects of the predictor variables upon the criterion variable were determined. These are shown in Figures 17.4 and 17.5.

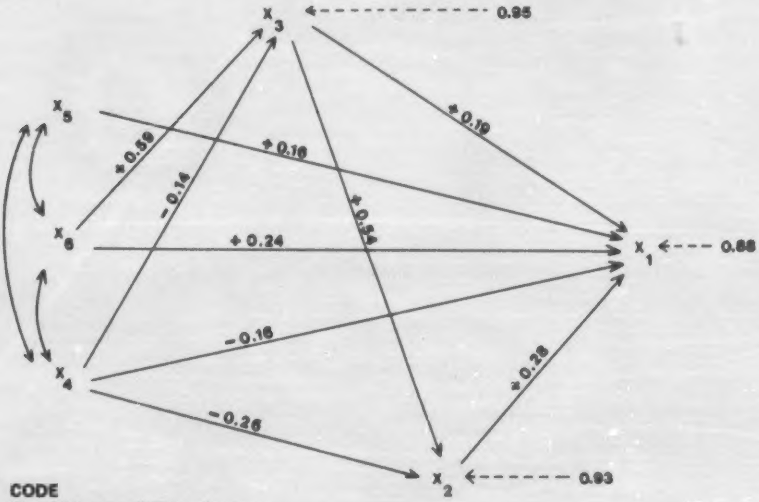
The causal model for lower cognitive performance in organic chemistry is shown in Figure 17.6

The direct and indirect effects of the predictor variables were determined, and these data are set out in Figures 17.7 and 17.8

DISCUSSION

From Figure 17.5 it can be seen that both satisfaction with teaching and student-orientation are mediating the indirect effects of non-involvement upon higher cognitive performance, but that the mediating effect of satisfaction with teaching is nearly twice the magnitude of student-orientation. This may be interpreted by conjecturing that non-involved students do not perform as well as others partly because the former fail to derive satisfaction from the teaching that is offered, and partly, but to a lesser extent, because they fail to perceive their lecturers as

Figure 17.3 Final model of higher cognitive performance in organic chemistry



CODE
X_1 = higher cognitive performance
X_2 = satisfaction with teaching (sattch)
X_3 = student-orientation
X_4 = non-involvement
X_5 = achievement motivation
X_6 = conscientiousness

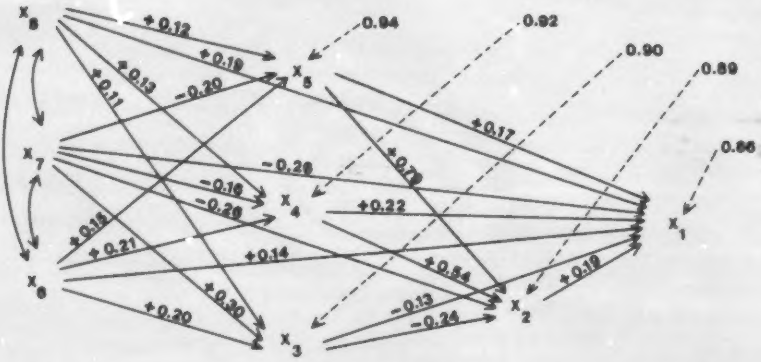
Figure 17.4 Contributions of variables to higher cognitive performance

VARIABLE	TOTAL ASSOCIATION (correlation coefficient)	DIRECT EFFECT (path co-efficient)	INDIRECT EFFECT (products of path co-effs.)	TOTAL EFFECT	NON-CAUSAL EFFECT (difference)
Sattch (X_2)	+0.30	+0.28	+0.00	+0.28	+0.02
Student-orientation (X_3)	+0.38	+0.19	+0.15	+0.34	+0.04
Non-involvement (X_4)	−0.32	−0.16	−0.11	−0.27	−0.05
Achievement motivation (X_5)	+0.29	+0.16	+0.00	+0.16	+0.13
Conscientiousness (X_6)	+0.45	+0.24	+0.11	+0.35	+0.10

Figure 17.5 Decomposition of indirect effects for higher cognitive performance model

VARIABLE	TOTAL INDIRECT EFFECT	INDIRECT EFFECTS VIA	
		SATTCH (X_2)	STUDENT-ORIENTATION (X_3)
Sattch (X_2)	+0.00	-	-
Student-orientation (X_3)	+0.15	+0.15	-
Non-involvement (X_4)	-0.11	-0.07	-0.04
Achievement motivation (X_5)	+0.00	-	-
Conscientiousness (X_6)	+0.11	-	+0.11

Figure 17.6 Final model of lower cognitive performance in organic chemistry



X_8
X_7
X_6
X_5
X_4
X_3
X_2
X_1
+0.12
+0.19
+0.13
+0.11
-0.20
0.94
0.92
0.90
0.89
0.86
+0.17
+0.70
-0.28
-0.16
-0.26
+0.22
+0.15
+0.21
+0.14
+0.54
+0.19
+0.30
+0.20
-0.13
-0.24

CODE
X_1 = lower cognitive performance
X_2 = satisfaction with teaching
X_3 = assertiveness
X_4 = student-orientation
X_5 = inspiration
X_6 = achievement motivation
X_7 = non-involvement
X_8 = conscientiousness

Figure 17.7 Contributions of variables to lower cognitive performance

VARIABLE	TOTAL ASSOCIATION (correlation coefficient)	DIRECT EFFECT (path co-efficient)	INDIRECT EFFECT (products of path co-effs.)	TOTAL EFFECT	NON-CAUSAL EFFECT (difference)
Sattch (X_2)	0.20	0.19	0.00	0.19	0.01
Assertiveness (X_3)	-0.18	-0.13	-0.05	-0.18	0.00
Student-orientation (X_4)	0.43	0.22	0.10	0.32	0.11
Inspiration (X_5)	0.35	0.17	0.15	0.32	0.03
Achievement motivation (X_6)	0.23	0.14	0.05	0.19	0.04
Non-involvement (X_7)	-0.50	-0.26	-0.16	-0.42	-0.08
Conscientiousness (X_8)	0.30	0.19	0.07	0.26	0.04

Figure 17.8 Decomposition of indirect effects for lower cognitive performance

VARIABLE	TOTAL INDIRECT EFFECT	INDIRECT EFFECTS VIA			
		SATTCH (X_2)	ASSERTIVE-NESS (X_3)	STUDENT-ORIENTATION (X_4)	INSPIRA-TION (X_5)
Sattch (X_2)	+0.00	-	-	-	-
Assertiveness (X_3)	-0.05	-0.05	-	-	-
Student-orientation (X_4)	+0.10	+0.10	-	-	-
Inspiration (X_5)	+0.15	+0.15	-	-	-
Achievement motivation (X_6)	+0.05	-	-0.03	+0.05	+0.03
Non-involvement (X_7)	-0.16	-0.05	-0.04	-0.04	-0.03
Conscientiousness (X_8)	+0.07	-	-0.01	+0.06	+0.02

student-oriented.

It can also be seen that conscientiousness exerts all of its indirect effect through student-orientation. Again, it may be conjectured that part of the conscientious students' success may be attributed to the fact that they are more likely than the non-conscientious students to see their lecturers as student-oriented and thus to benefit from interaction with them.

In terms of an added-variance model, the perceived lecturer characteristic, student-orientation, accounts for 3.7 per cent of the variance in performance, or about 17 per cent of the total variance explained by the model. Approximately half of this influence is being exerted indirectly via satisfaction with teaching.

Figure 17.7 demonstrates that student non-involvement exerts a substantial negative direct effect upon lower cognitive performance in organic chemistry, but a small indirect effect. This result is similar to that observed for higher cognitive performance in the same research sample.

Similarly, achievement motivation and conscientiousness exert much of their influence upon lower cognitive performance through direct effects, with small indirect effects being exerted via perception of lecturer.

From Figure 17.8 it can be seen that four variables provide the links for the indirect effects of non-involvement upon lower cognitive performance.

Satisfaction with teaching and student-orientation are again significant as mediators of the effects, although assertiveness and inspiration are also involved to a marginally smaller extent. Achievement motivation and conscientiousness also exert small indirect effects via lecturer assertiveness, student-orientation and inspiration.

In terms of an added-variance model, the perceived lecturer variables, inspiration, student-orientation and assertiveness account for nearly 10 per cent of the performance variance, or about 38 per cent of the total variance explained by the model. In this instance about one third of the influences of these variables is being exerted indirectly via satisfaction with teaching.

On the other hand the indirect influences of student personality variables account for nearly 12 per cent of the variance in performance, of which approximately one third of their influence is being exerted indirectly through the perceived lecturer variables and satisfaction with teaching.

CONCLUSION

These findings give modest support to the teaching-learning model which includes the students' perceptions of the lecturer's behaviour and satisfaction with teaching as mediating variables in the determination of student performance. Any model of student performance in organic chemistry at first-year level should therefore include variables of the type involved in this study. While the contribution of each of these variables is small, it must be remembered that student performance appears to be a multivariate phenomenon to which each variable makes a small contribution.

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18 Individual and Group Performance

STUDENT PERFORMANCE: PRODUCT OR PROCESS?

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The aim of this paper is to look at the type of performance which could or should be expected from students on the basis of a model of the learning process. The emphasis is on the performance itself but this is not to deny the importance of the way in which it is assessed and how that assessment is used.

In broad terms the purposes of student performance can be described as formative and predictive: formative when performance is designed to provide feedback on a student's progress; predictive when the purpose is to provide evidence on a student's likely future performance. It is likely that these different purposes will require performances differing in emphasis if not in type.

THE INFORMATION PROCESSING MODEL OF LEARNING

The information processing model of the way humans learn is derived from the field of cognitive psychology. It is concerned with 'complex perception, the organization of memory, language, thinking, and in general the complicated processes which underlie the intellectual side of human life' (Broadbent 1975, page 163). Detailed accounts are provided by Neisser (1967), Lindsay and Norman (1972), Newell and Simon (1972) and Bower (1975), and in giving a brief outline it is important to remember that a number of controversies remain: eg over the number of memories, the relationship of process and structure.

The individual learner is seen as an active participant in the learning process, actively seeking out information by attending and by being able to control the processing stages. The model is based on the hypothesis that information is received through the senses, and is processed through a series of stages. The processes include selective perception ('attending'), encoding, storing, retrieving and responding. The stages in which these processes occur are a sensory register, short-term or working memory, a long-term memory or store, and a response generator. The ease with which information can be retrieved and the range of problems to which it can be applied depend on the way it is stored in the long-term memory. Such a structure requires not only clearly defined elements but a rich web of interconnections between the elements. It has been suggested (Norman 1978) that newly encoded information is either added to the existing structure ('accretion'), requires the structure to be altered ('restructured'), or focuses the structure of a particular area ('tuning'). Arguably it is restructuring and tuning with which higher education should be concerned rather than with merely learning factual material by accretion. The flow of information to and from the long-term memory can be consciously determined through the 'executive control processes' (Gagné 1977): eg retaining items in the short-term memory by rehearsal for specific processing. The personal rules and strategies that an individual develops, and the way he or she uses an 'executive control process', add up to a personal 'cognitive style'; it remains a matter of controversy whether such styles can be categorized and whether they are relatively fixed attributes (Pask 1967; Laurillard 1978).

STUDENT PERFORMANCE AS AN INDICATOR

Inherent in this approach is the importance of what lies behind the performance of a task. A distinction is sometimes made between students' end-of-course performance as a test of *achievement* and as a *predictor* of future performance, but the emphasis on the processes behind performance in the information processing model casts doubt on this distinction unless 'achievement' is limited to the recall of factual material, a practice which unfortunately remains widespread. Student performance needs to be seen not as an end in itself but as an indicator of the processing and structuring skills which lie behind it. In this sense performance or behaviour has a sampling function rather than being the objective of instruction as such. Two practical implications stem from this: firstly there needs to be an element of unfamiliarity or novelty in the task to indicate transfer of competence; and secondly the task needs to be structured or broken down so that the process and structure behind it can be revealed.

TRANSFER OF COMPETENCE TO UNFAMILIAR SITUATIONS

The concept of transfer, ie of applying knowledge and skills to situations with degrees of unfamiliarity, is the basis of ideas of 'understanding', 'critical thinking', 'productive thinking', etc. The key to the application of knowledge and skills to new situations in the case of the information processing model, is the richness of cognitive structure in terms of multiple, valid inter-connections between elements (concepts). If the learner has to demonstrate competence, apply knowledge in an area or to a problem with a degree of unfamiliarity, he will be less able merely to reproduce the performance of others. This is not always apparent in practice: for example, undergraduate students of history are increasingly required to demonstrate facility in handling primary source documents. However, the documents on which test performance is based are usually those which have been encountered during their course of instruction and which they have heard expounded and discussed. Producing a valid commentary on the basis of what has been heard is quite different from analysing a document which has not been studied previously, and is even further removed from the searching out of such a document in the course of research. Another aspect of transfer is the ability to apply knowledge to problems presented in a different way. The performance required, for example, (i) to make statements about the heart and circulation of the blood, (ii) to choose from multiple-choice questions, (iii) to identify the parts and circulation on a diagram, and (iv) to make this identification on an actual body during an operation, calls for increasing degrees of transfer (!) which must be demonstrated by the student and cannot be assumed to be likely to be made. In information processing terms it requires 'tuning' of existing knowledge to new situations. Effective transfer depends on the existence of a richly variegated cognitive structure *and* effective search and retrieval procedures. Such structures and skills do not happen, they need to be developed during learning and demonstrated in suitable performance.

STRUCTURING THE TASK

Since the processes behind performance determine its predictive value, the performance itself needs to be structured so that these processes can be displayed and assessed. If performance is to be predictive, it must be indicative of the ability to process information in the form it is presented in a given subject area or discipline, to indicate understanding of it in other words. There is plenty of evidence that students do this badly, eg medical students experiencing difficulty in interpreting X-ray photographs (Abercrombie 1960) or literature students unable to interpret straightforward poetry (Richards 1929). The type of task which requires this kind of performance is illustrated by giving students a scientific paper without the abstract, introduction, conclusions or discussion, and requiring them to 'draw conclusions from and discuss the experiments described' (Group for Research and Innovation in Higher Education 1973, page 29).

The complementary point concerns overall performance of extended tasks, essays, problems, projects, dissertations, which involve bringing together a variety of information processing and problem-solving skills. Lewis (1973) suggests that performance should be structured to allow students to demonstrate three types of abilities: (i) to recognize, recall and solve; (ii) to explain the solution; (iii) to justify the explanation. In other words performance should demonstrate what students understand as well as what they can do. Performance to be predictive should demonstrate not only that the student is correct but that he is correct for the right reasons. This can be shown in a structured task in which a medical condition is described as it develops and the students respond to questions at each stage of the development (Knox 1975). Procedures such as requiring an annotated bibliography at the end of an essay show some movement in this direction, but what is needed are procedures at undergraduate level which resemble a searching viva voce examination on a thesis or dissertation at postgraduate level. Essentially such procedures should be aimed at revealing the complexity of the cognitive structure and retrieval processes which lie behind competence and performance.

PERFORMANCE OF DISCIPLINE PROCEDURES

Given that the form of the performance should involve an element of the unfamiliar and should be structured so as to reveal the underlying processes, the question remains what nature of performance is required from students. The information processing model gives prominence to knowledge in its full sense of concepts, propositions and procedures. In the learning situation the whole process involves an interaction between external knowledge as it exists in the world and the internal knowledge of the learner. Without underestimating the importance of individual differences or personal meaningfulness, academic competence is shown by the way the student displays the procedures of 'external' knowledge, which in turn depends on his own cognitive structure relating to the relevant knowledge structure. Performance required from students should be based on the procedures of the disciplines or subject matter of a course. The model focuses attention on performance that indicates that students, for example, are thinking like scientists and historians, rather than merely quoting the writings of scientists and historians. Hence the need to look into such questions as: What sort of problems do experts approach? What are the unifying ideas or concepts? How are they used to organize knowledge? What are the problem-solving techniques? How do historians, physicists, literature specialists... approach problems? What part or parts of their procedures are relevant for undergraduate performance? Reif (1978) has argued that students do not acquire these skills merely by exposure and that similarly the existence of these skills cannot be assumed from ability to produce (or reproduce) course content. Identifying, analysing and then selecting discipline procedures for student performance is not easy, particularly in areas like history and literature, where they are very controversial. Setting questions which require only knowledge of course content or which are so broad as to defy analysis is far easier. It is important that such analysis should not be confined to broad issues but related to practical performances such as interpreting a poem, or learning from a physics paper. The stress on procedures should not obscure the fact that performance of a task depends on the ability to retrieve the necessary knowledge, which in turn depends on the way that knowledge is stored. If performance is to be within a framework of a discipline then the way the individual's knowledge is organized should relate to the structure of that discipline. It needs to be organized to fit in with the underlying ideas of the subject matter. Performance needs then to demonstrate the relationship and underlying structure of knowledge.

Emphasis on the procedures and structures of disciplines or of subject matter raises questions for multi-disciplinary or inter-disciplinary courses. The issue with such courses is whether they require a performance from students which demonstrates more than factual knowledge of different subject areas held together by a theme, be it historical, geographical, social, etc. The merits or otherwise of such approaches are beyond the scope of this paper but it remains an issue how far student performance can be expected to reflect procedures and structures of a number of disciplines, after comparatively brief exposure to them, and often in the early stages of a degree course.

INNOVATIONS IN ASSESSMENT METHODS

In recent years there have been a number of innovations in the way students have been assessed and in the type of task they have been required to carry out. Broadly these can be divided into three types: the assessment of course work (often misleadingly called 'continuous assessment'); extended tasks (projects, dissertations, long essays); and 'open' or 'seen' examinations in which students have access to sources, usually books, or are informed of the questions or topics beforehand. Many of these changes seem to have been made for negative reasons, as a defensive reaction in the face of criticism of traditional examinations and methods of assessment. Because of its concern with the processes underlying performance the information processing model provides a positive framework for identifying tasks that will predict future performance. It is not just the nature of the task which is set, but the conditions under which it is carried out which determine the real performance required from students. The use of course work for assessment covers a wide variety of tasks carried out under (usually) uncontrolled conditions and there is always the danger of second-hand work. The advantages of taking tasks performed during a course is that different aspects of performance can be assessed, not least the ability to use information from a variety of sources, eg from experiments in the laboratory. The extended task, the completion of a project or the preparation of a dissertation or long essay, requires an element of creativity, the ability to restructure relationships between concepts and to deploy a whole range of competencies. Performance can be seen as indicating the ability to come to terms with new concepts. 'Open book' examinations which should not be viewed as being 'easier' than their traditional counterparts, make different demands on the student. Obtaining information from books is not the same as retrieving facts from memory; arguably it requires a different dimension of complexity. The stress is on the organization and re-organization of information rather than just on its recall. Identifying these processes and relating them to the purposes of a course will enable a coherent prescription of performance to be designed.

ABILITY TO LEARN

One way of summing up the implications of the information processing model for student performance is to see such performance as an indicator of ability to learn.

End-of-course performance should indicate competence in processing information in a particular subject area and at a particular level, encoding it and storing it so that it can be retrieved and applied to relevant problems. Competent performance in a discipline should indicate an ability to learn complex material presented in specialist form, eg from experiments, research data, learned articles, monographs and specialist textbooks. There are, of course, strong implications from this for the actual nature of instruction, which cannot be divorced from the performance required from students. Given the 'knowledge explosion', notably in the natural sciences, performance that indicates an ability to learn is more valuable than that which indicates only that certain course content can be recalled.

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19 Individual and Group Performance
EVALUATING THE QUALITY OF LEARNING ENVIRONMENTS

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STUDENT LEARNING AS AN INDICATOR OF PERFORMANCE

I do not think I shall be accused of saying anything very radical if I assert that the performance of a course or academic department is best assessed by finding out how effectively its students learn. Yet most evaluation measures not learning at all, but aspects of teaching. What have course evaluators been up to? I assume, with them, that there is some kind of connection between teaching and learning; what I question is whether we should continue with the taken-for-granted assumption that the relationship is both necessary and simple.

Let us suspend belief in the latter assumption - there is plenty of evidence to tell against it - and consider the possibility of beginning from a different starting point: that of the learner. The concern then is with the student's subjective experience of the academic environment. In this perspective, it is necessary to examine the demands of curriculum, teaching, and assessment from the student's point of view. We have been too ready to assume that certain methods of assessment and teaching must influence student learning in a particular way, without considering students' experience of them. Taking the learner's perspective as a way of evaluating a course or department involves relating the approaches students use to tackle learning tasks as diverse as reading and scientific problems to their perceptions of the context of those tasks.

The performance of a course is reflected in the quality of students' learning. How do we measure this quality? It is no use taking the results of student assessment in this case, because the categories it uses and the way it distributes students within them are inextricably bound up with the characteristics of the learning environment whose quality we are trying to assess. Recent research has fortunately provided a valuable conceptual distinction enabling us to distinguish qualities of learning. Marton (1976) describes contrasting approaches which students use to deal with learning tasks. A student will either strive to understand an academic article, essay, or whatever, actively relating facts to conclusion, imposing meaning, and generally reaching thorough understanding; or he will take a superficial, unreflective, reproductive approach, and not achieve complete understanding. That is an over-simplification of the distinction between deep and surface levels of approach and outcome, but it is enough for our purposes. There is now impressive evidence of the usefulness of this way of describing the quality of student learning in relation to many kinds of task (Entwistle et al 1979; Laurillard 1979).

DIMENSIONS OF THE ACADEMIC ENVIRONMENT

The first problem was to identify the components of the learning environment from the students' point of view. Using a combination of interviews and questionnaires, it was possible to isolate eight dimensions which students use to describe the characteristics of the academic departments which affect their learning. These eight scales are summarized in Figure 19.1. Similar components were found in a comparable study in the Netherlands (Gaff et al 1976). Every questionnaire item in the first factor of the analysis related to the students' perceptions of their lecturers' understanding of their learning needs and their teachers' teaching effectiveness[1].

Figure 19.1 Dimensions of learning environments

Relationships with students	Closeness of lecturer/student relationships; help and understanding shown to students
Commitment to teaching	Commitment of staff to improving teaching and to teaching students at a level appropriate to their current understanding
Workload	Pressure placed on students in terms of demands of the syllabus and assessment tasks
Formal teaching	Formality or informality of teaching and learning (eg lectures v individual study)
Vocational relevance	Perceived relevance of courses to students' careers
Social climate	Frequency and quality of academic and social relationship between students
Clear goals and standards	Extent to which standards expected of students are clear and unambiguous
Freedom in learning	Amount of discretion possessed by students in choosing and organizing academic work

Although there clearly is a relationship between teaching and learning from the students' point of view, the association is a complex one. Subsequent stages of the questionnaire study, which is still in progress, show that different departments make very different demands on their students. Moreover, students in the departments interpret the demands differently, as an interview study of a sample of students in six of them illustrates (Entwistle et al 1979). The heavy workload in the applied science department was accepted more readily than the much lighter one in the social science department, for example. Formal teaching, despised by the arts and social science students (although only experienced in quantity by the latter) was thought to be necessary by the scientists. What the science students meant by a good teaching relationship differed from what the arts students meant. These differences seem to be empirical reminders of the uncontroversial statement (often forgotten by traditional course evaluation) that what is a 'good' learning environment for students in one department or subject area is not necessarily good in another.

LEVELS OF APPROACH AS A FUNCTION OF CONTEXTUAL DEMANDS

The questionnaire results suggest that we can identify distinctively difference academic environments which provide conditions for effective learning to take place. But only a detailed analysis of the interview results can make a direct link between deep and surface approaches to student perceptions of contextual demands. In the interviews I asked students about their approaches to a range of learning tasks, including scientific problems, essays, reading, and examination preparation.

They were also invited to talk about the strengths and weaknesses of their department and its courses. I did not ask them to make the connection between the two sets of questions; nearly all of them, nevertheless, did.

The main point to emerge from these analyses, as far as we are concerned in this paper, is that the students' perceptions of the academic environment and the approach they take to learning tasks are closely associated. Certain approaches to teaching and assessment provide the conditions for a desire to learn, a favourable attitude to studying, an understanding of fundamentals, and a deep-level approach. Others do the opposite. It is not really surprising that this should be so. Thus a tutor without a commitment to teaching a subject might put students off studying it, while enthusiastic teaching encouraged students to put more effort into a subject. The careful use of analogies helped students to see the meaning underlying a mathematical abstraction. Part of a subject examined in a way which demanded the reproduction of discrete facts encouraged a surface level approach; failure to reach the level of students' previous knowledge in a lecture made it difficult to learn; an environment in which students felt threatened (in one case being forced to attempt to solve a problem on the blackboard in front of fellow students) discouraged efforts to come to terms with the subject-matter[2].

It is interesting to note briefly here that the characteristics of deep and surface levels of approach differ from department to department, and that these differences are parallel to the different types of departmental environment I referred to above. Just as there are different 'good' learning contexts, so are there different ways in which deep-level outcomes can be achieved. In the sciences the style adopted is self-contained, step-by-step, and rather narrowly logical; in the arts and social sciences it is somewhat broader and analogical, attempting more frequently than in science subjects to link material to be learned with previous experience. These contrasting styles of learning (identified by Gordon Pask as operation and comprehension learning respectively; see Entwistle 1978) can both be the points of departure for deep-level approaches. They can each be seen as forms of adaptation to the differing characteristics of academic environments.

Other parts of the interviews show that what appears to be essential to a deep-level approach to a task are a background knowledge of concepts related to it (especially in science) and a high level of interest in it (especially in arts subjects). The contextual variables which describe the conditions for an understanding of fundamentals and interest in a task have been outlined above. In particular, good teaching, sensitive assessment methods, and openness to students provide a more favourable environment for deep-level approaches to be developed.

CONCLUSION

The results I have outlined suggest a strong connection between the perceived characteristics of a teaching-learning environment and the quality of the learning that takes place within it. The effectiveness of a course can be indicated by the quality of the students' approaches to learning tasks and the quality of outcome of learning. The means to improve effectiveness reside in the relationship between the environment and the learning.

In other words, if your students are adopting rote learning strategies when they should be trying to understand, and not understanding concepts but rather passing exams by memorizing formulae or trotting out received opinion, then there is something wrong with your teaching. That is nothing startling. Nevertheless, the form of evaluation I am arguing for requires a fundamental shift in our attitudes, away from a focus on teaching and towards learning. The techniques to do this are not yet developed; I have merely indicated some starting points.

NOTES

1 A description of the factor analysis techniques used and a fuller discussion of the results obtained can be found in Ramsden (1978).

2 Evidence for these assertions is contained in transcripts of the interviews. Space precludes their quotation here; see Ramsden (1979).

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20 Individual and Group Performance
INDICATORS OF STUDY METHODS

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The present research arose from a desire to help students with a certain learning style. From various sources (comments by staff, spontaneous study counselling by teaching services staff, invited talks in departments, lunch time meetings with students, course evaluations and workshops on essay writing) a picture emerged of a student type which could be helped by appropriate tutoring. Its characteristics were hard work and conscientiousness, engagement in less than average social activity, a tendency to be less self-confident than the average student, a relatively low independence of mind, a substantial adherance to syllabus (Parlett 1970), and little ambition or adventurousness. There was an assumption that these characteristics were dimensions upon which students could be distinguished; but it was not assumed that students with severe study problems would have extreme characteristics upon these dimensions. Nevertheless this is something worth checking and is the purpose of the work reported here.

AIM

We needed:

1 To find out what factors distinguish individual students; and
2 To find out the study factors that distinguish students in different subjects; before we could
3 See whether students with study problems reporting to a counsellor are significantly different from others on these factors.

METHOD

From a narrative description of the kind of student above (Bligh 1977) a number of statements were derived which could be rated by students on a 6-point scale as to the extent they felt the statement described them. To these statements others were added from research dealing with behaviour appropriate to the student type (eg some items relating to syllabus-boundness were taken from Parlett). Thirty-nine statements were eventually formed into the questionnaire shown in Figure 20.1.

In 1976 all undergraduate students at Exeter University were circulated with a questionnaire on assessment by the Student Guild. The study methods questionnaire was appended to this and data from 1431 students (45 per cent of the total undergraduate population) were obtained.

New students enrolling in 1978 were likewise circulated with the study methods questionnaire (this time through the Teaching Services Centre, the project now being supported by the Nuffield Foundation) and 662 gave usable replies (39 per cent of the undergraduate intake).

FINDINGS DISTINGUISHING INDIVIDUAL STUDENTS

Since students, even those replete with the study problems under examination here, have more or less integrated personalities, it could be expected that there would be relationships between the items in the questionnaire concerned with study techniques. Relationships between the items were measured by a factor analysis of the correlations among the items based on the 1976 students. The factor method

Figure 20.1 Questionnaire on study methods June 1978

1	When revising for exams I try to cover a few topics / the whole syllabus	a few topics	.....	whole syllabus
2	Teachers at school rarely/usually gave us clear guidance on how to pass 'A' levels	rarely	.....	usually
3	This year I never/usually tried to develop my own ideas on a topic before I completed the background reading	never	.....	usually
4	In my most recent exams I never/frequently wrote controversial answers	never	.....	frequently
5	I have seriously/never considered a career in teaching	never	.....	seriously
6	I have seriously/never considered a career in industry, business or commerce	never	.....	seriously
7	I often/rarely have ideas not found in the textbooks	rarely	.....	often
8	I have never/often openly disagreed with my teachers	never	.....	often
9	I have never/often asked questions in class	never	.....	often
10	I rarely/usually try to keep a full set of notes on my course	rarely	.....	usually
11	I rarely/usually feel guilty if I don't work on weekday evenings	rarely	.....	usually
12	I never/often like to work against background music	never	.....	often
13	I have an alcoholic drink most days/never	never	.....	most days
14	I rarely/usually go out with friends for a while in the evening	rarely	.....	usually
15	I rarely/usually study only what I am required to study	rarely	.....	usually
16	When revising I rarely/usually do practice answers	rarely	.....	usually
17	I never/usually discuss work with other students	never	.....	usually
18	Compared with most pupils I was rarely/usually well behaved at school	rarely	.....	usually
19	I have worked less hard/harder than most students	less hard	.....	harder
20	I am/am not actively interested in sport	uninterested	.....	interested
21	I studied fairly erratically/regularly for my 'A' levels (or other qualifying course)	erratically	.....	regularly
22	My religious views are similar/dissimilar to those of my parents	dissimilar	.....	similar
23	I have above/below average ability compared with others on my course (s)	below	.....	above
24	I liked/disliked maths at school	disliked	.....	liked
25	Compared with most people I am/am not fairly ambitious	unambitious	.....	ambitious
26	Money is a minor/major consideration for me in accepting a job	minor	.....	major
27	When studying I prefer a well structured syllabus/freedom to explore in detail what interests me	freedom	.....	structure
28	Most students talk less/more than me in discussion classes	less	.....	more
29	I have no/considerable interest in present-day politics	no	.....	considerable
30	I prefer classical music to 'pop'	classical	.....	pop
31	When revising I use my notes more/less than books	use books	.....	use notes
32	To have an exciting job is more/less important to me than having a steady one	exciting	.....	steady
33	I should like/dislike a job in which my decisions affect my colleagues	dislike	.....	like
34	This year I have skipped none/25% or more of my classes	0%	.....	25% or more
35	I consulted old exam papers 0/5 or more times this year	never	.....	5 or more
36	In the past year I have met one or more of my teachers socially on 0/5+ occasions	0	.....	5 or more
37	I have never/on 5 occasions or more taken a job	0	.....	5 or more
38	The number of (school) societies I belong to is 0/5+	0	.....	5 or more
39	I decided to go on the arts/science side by the age of 11/16+	11 or earlier	.....	16 or older

chosen was image covariance analysis using 'Little Jiffy Mark 4' (Kaiser and Rice 1974) in the BMDP programme series (Dixon and Brown 1977).

Factor loadings for items with substantial loadings (>.25) are shown in Figure 20.2, along with the proportions of variance accounted for by the seven major factors. In addition this figure shows factor loadings that were similarly obtained from the data on the students newly enrolled in 1978. Again only substantial loadings (>.25) are shown. The item loadings on each of the factors were used to form scales. Their reliability coefficients ranged from 0.47 to 0.71 with an average of 0.60.

It can be seen that the dimensions of the description of the student type given on page 143 were broadly confirmed, with the addition of a 'revision methods' factor which contained items which we shall see strongly reflect subject differences. In general the factor loadings for the 1978 data confirm the 1976 data. Where there were not substantial loadings for the 1978 data, the items generally reflected experiences not available to students newly arrived at the university.

It does not of course follow that the factors listed in Figure 20.2 are the only, or even the most important, factors distinguishing students' study behaviour, but they seem relevant to our students. In criticism it may be said that the factors produced are purely a function of the selection of questions when the questionnaire was designed. This may be true, but it does not follow that nothing worthwhile was found. The dimensions show some stability. Significant correlations between them make good sense, yet they are relatively distinct in that, with few exceptions, different items contribute most strongly to them. Furthermore, many of our preconceptions about which items would contribute to these dimensions were wholly erroneous. For example, in none of our analyses have more than a few of Parlett's syllabus-boundness items behaved as part of a single dimension. Participation in sport and other societies (Items 20 and 38 in Figure 20.1) are unassociated with informal social activities. Furthermore, we thought 'I have above average ability compared with others on my courses' would be related to 'Confidence' (and certainly more than a preference for 'pop music'). But we can see that personal relationships are an important part of Confidence. The Confidence is the confidence of extroversion as distinct from the confidence of inner assurance.

DISTINGUISHING STUDENTS TAKING DIFFERENT SUBJECTS

The extent to which different courses of study produce different study styles and different study problems has been little investigated. Entwistle and Wilson (1977, pages 104-107) presented some data showing differences, but they were restricted to pair-wise comparisons across means, and were largely illustrative.

The question we asked was: What items in the study methods questionnaire best distinguish between the nine groups of courses shown in Figure 20.5?

Discriminant analysis revealed two readily interpretable functions, together accounting for 78 per cent of the variance.

Highest item loadings on the first discriminant function suggest the arts-science distinction. Low scorers on this function tend to revise the whole syllabus, to do practice answers, to like maths at school, to be considering a career in industry, business or commerce, and not to study regularly. Figure 20.3 confirms that maths, applied science and physical science students score low on this function.

High scorers on the second function also tend to revise the whole syllabus but to write controversial answers in exams and have an interest in present day politics whilst not asking questions in lectures and not doing practice answers. It

Figure 20.2 Factor loadings (greater than .25) for study problem questionnaire items

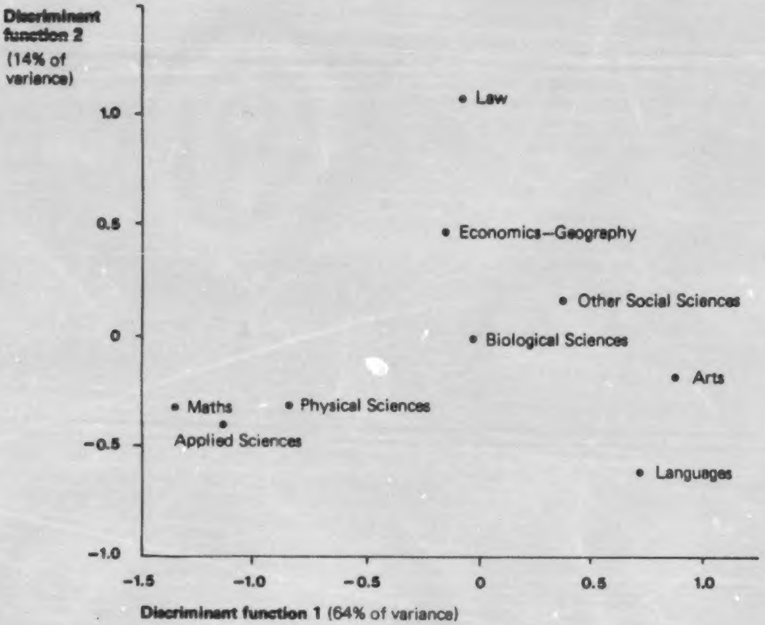
	FACTOR	VARIANCE	LOADINGS 1978 loadings in brackets			ITEM
INDEPENDENCE OF MIND	1	1.6	624	(446)	4	Write controversial answers in exams
	(3)	(1.2)	604	(590)	7	Have ideas not in text book
			484	(-)	8*	Often disagree with teachers at university
			427	(542)	3	Tried to develop own ideas before reading
			265	(-)	29	Interest in present day politics
HARD WORK/ CONSCIENTIOUSNESS	2	1.4	687	(670)	19	Worked harder than most students
	(1)	(1.5)	648	(653)	21	Studied regularly
			321	(371)	11	Guilty not working weekday evenings
			-267	(-)	34*	Skipped lectures
			265	(-279)	15	Study only what required
			(-)	(344)	1*	Revise whole syllabus
			(-)	(274)	10*	Full set of notes kept
SOCIAL ACTIVITY	3	1.3	664	(567)	13	Drink most days
	(4)	(1.1)	630	(540)	14	Out in the evening
			333	(283)	30*	Prefer pop to classical music
			-252	(-)	32	Prefer steady job to exciting one
SYLLABUS BOUNDNESS/ USE OF NOTES	4	1.0	543	(435)	31	Use notes for revision
	(9)	(0.5)	431	(264)	10*	Full set of notes kept
			403	(-)	1*	Revise whole syllabus
			-252	(-)	34*	Skipped lectures
CONFIDENCE/ EXTRAVERSION	5	0.9	454	(-)	36	Met teachers socially
	(2)	(1.4)	444	(718)	9	Ask questions in lectures
			-411	(-690)	28	Most students talk more than me in discussions
			-277	(-)	30*	Prefer pop to classical music
			267	(-)	37	Vacation jobs
			-	(487)	8*	Often disagree with teachers at University
AMBITION	6	0.8	522	(471)	26	Money major job consideration
	(6)	(0.7)	450	(309)	25	Fairly ambitious
			328	(252)	6	Career in business or commerce
			264	(346)	33	Like job to affect colleagues
REVISION	7	0.7	503	(348)	16	Do practice answers
	(8)	(0.5)	395	(420)	35	Consult old exam papers
			361	(-)	24	Liked maths at school

* Two loadings

is apparent from Figure 20.3 that law students score particularly highly on this function, followed by economics and geography students and other social scientists. Tentatively we can label this function a 'social science' dimension, although we might have hoped that other social sciences had scored higher on it and that law students had scored less extremely.

From the group centroids of Figure 20.3 it can be seen that maths and sciences are similar, as are arts and languages. These similarities are more clearly shown in Figure 20.4 where the groups have been clustered in hierarchical fashion using the complete linkage approach of Johnson (1967). Thus maths and applied science are most similar and form the first cluster. Arts and languages are the next most similar, forming the second cluster, and so on. The point of greatest interest is that the differences between law students and others on these

Figure 20. 3 Centroids of groups of students on first two discriminant function spaces

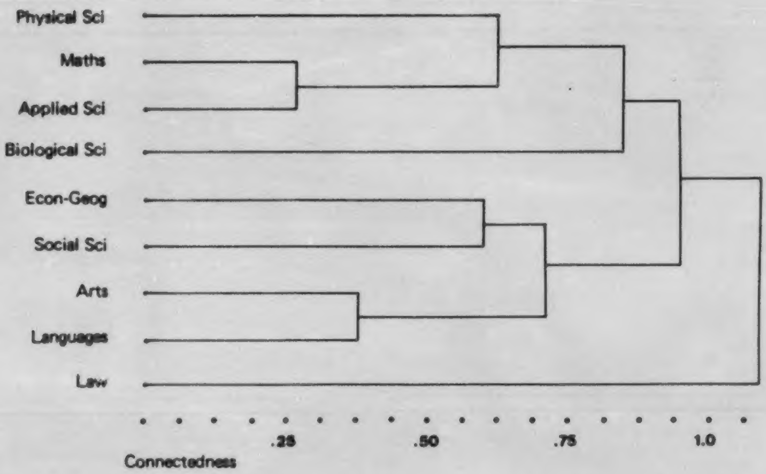


functions is greater than the differences between arts and science students.

With this exception it can be seen that a traditional notion of the relationships among university subjects can be recovered from the questionnaire used. In so far as differences between subjects are reflected in differences in indicators of study methods, the present questionnaire may be said to have some validity.

The extent to which these results 'fitted' the data was gauged by applying the first three discriminant functions to the original data and determining how many students would be correctly classified. Results are shown in Figure 20. 5. Of the 1076 students originally classified into departmental groups, 37 per cent were successfully reclassified into the same groups by the three-discriminant function analysis. If students are grouped according to conceptually related course groups, then for the 'hard' sciences (physical science, maths and applied science) 76. 4 per cent of the students are correctly classified; for the social sciences (economics, geography and other social sciences) 45. 8 per cent are correctly classified; and for the arts and languages together, 62. 2 per cent are correctly classified.

Figure 20.4 Hierarchical clustering of group centroids from the discriminant analysis



Coupling these prediction rates with those for the remaining groups (law and biological sciences) an overall prediction success rate of 58.8 per cent is achieved. These results replicate a finding of Entwistle's with very different data, namely, that the arts/science division overshadows other differences between subjects. But there is one exception - law.

STUDY SKILLS PROBLEMS

In this project a study skills counsellor was used to counsel students who came either by invitation or because they were having study difficulties. Invitations were on the basis of questionnaire responses although students were selected independently of the present analysis. For the present purposes these two groups are not differentiated, although an analysis of their differences is reported.

At the end of the 1978-1979 academic year, counselling records of the 58 students who had attended the Centre and who had completed the study methods questionnaire were summarized and then classified as follows:

1 Skills problems (reading, essays, etc.)

Figure 20.5 Predicted membership of departmental (subject) groupings by students from discriminant analysis

Group	Predicted (Percentages of actual groups)								
Actual	1	2	3	4	5	6	7	8	9
1 Physical Science N=108	28.7	24.1	12.0	10.2	12.0	5.6	2.8	0.0	4.6
2 Maths N=77	11.7	55.8	16.9	2.6	3.9	6.5	0.0	0.0	2.6
3 Applied Science N=73	16.4	37.0	31.5	1.4	1.4	11.0	0.0	0.0	1.4
4 Biological Sciences N=87	12.6	2.3	5.7	26.4	17.2	13.8	5.7	2.3	13.8
5 Law N=88	4.5	0.0	1.1	11.4	61.4	9.1	5.7	4.5	2.3
6 Economics-Geography N=181	5.5	6.1	6.1	6.1	16.0	38.1	12.7	5.5	3.9
7 Social Sciences N=118	3.4	1.7	3.4	10.2	11.9	18.6	19.5	19.5	11.9
8 Arts N=219	1.8	0.9	0.5	9.6	6.4	6.4	15.5	38.8	20.1
9 Languages N=169	3.2	0.0	2.4	5.6	2.4	6.4	12.0	30.4	37.6

2 Study problems (organization)
3 Poor approach (lack of confidence, apathy, etc)
4 Critical of course
5 Anxiety/emotional problems
6 Family/social problems
7 Examination problems

The most common problems related to particular study methods, such as reading skills and the writing of essays. Almost as common were general problems of approach to study, low confidence, defeatist attitudes and apathy.

An attempt was made to investigate the relationships between the presence of these problems and the students' scores on the scales from the questionnaire. Canonical variate analysis using SPSS (Nie et al 1975) was used to see to what extent the study problems could be predicted from a knowledge of scores on the questionnaire scales.

No significant results were obtained (the p-value associated with the first canonical correlation was .712). Each of the study problems was then considered separately. Mean scores on the sub-scales were obtained for those students with each problem and compared by t-tests with the mean scores of students who did not present the problem. Students who came by invitation (n=43) were similarly compared with students who came of their own accord. Male scores were compared with female scores. Of the 63 t-tests only two were statistically significant at the 5 per cent level. Since this would be expected by chance, effectively none was significant.

Why were no significant relationships found? Given that the scales are reliable and the classification of study problems is not in error, the most likely explanation is that the scales may not have been relevant to the study problems presented. Although the factor analyses give good reasons to suppose that the type of student exists for whom the questionnaire was designed, this student is not necessarily sufficiently disturbed to seek study counselling. Indeed this was the reason why the questionnaire was originally designed. Students were invited to attend on a different basis from the factor analysis (Bligh et al 1979) and may not actually have been of this type.

Such an explanation is consistent with our expectations. It confirms that the questionnaire is not an instrument suitable for detecting students with serious study problems, but it may be a suitable diagnostic aid to help teachers identify students with certain combinations of characteristics which demand one tutorial strategy rather than another. In other words this paper gives indicators, but not a diagnostic instrument, of study performance. It does not provide indicators of more or less severe study problems. There could be any number of causes of failure.

CONCLUSIONS

Seven scales relevant to students' study behaviour show some reliability and may be worth further study.

The arts-science dimension appears to be far greater than any other in differentiating the reported study behaviour of students on different courses; but students of law form a distinctive group.

The scales do not constitute a diagnostic instrument for more or less severe study problems.

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21 Individual and Group Performance

STUDENT PERCEPTION OF THE REASONS FOR ACADEMIC SUCCESS AND FAILURE

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INTRODUCTION

Recognizing the standard of one's work and relating the performance to causal factors is an important stage in the establishment of the mature student identity[1]. This study draws on attribution theory to examine this stage by making a comparative analysis of the reasons given by mature and younger students for actual academic successes and failures. Attribution theory is a set of principles proposed to account for how people draw causal inferences about one another's behaviour, self-perception being a special case. Effort and ability are personal (internal causes), whereas luck and task difficulty are impersonal (external) causes. The degree to which people perceive events as being externally or internally controlled can affect many aspects of their experience[2] including academic and intellectual achievement. For a difficult task, success is said to depend on effort and failure on task difficulty[3]. Assuming academic tasks are difficult then students should be more likely to mention task difficulty and luck (external factors) in accounting for failure, and effort and ability (internal factors) in accounting for success. High achievers tend to attribute success to personal effort[4] and low achievers tend to attribute success or its lack to task difficulty[5]. Students direct from school could be described as high achievers and so their attribution pattern should stress internal factors. On balance it was hypothesized that mature students would put more emphasis on external factors than younger students, not just because of educational background, but because of the likelihood that external factors (like families) would affect their performance.

METHOD

To discover if attributions depended on the type of assessment described, questions were asked on both exams and essays. Respondents gave reasons which contributed to the success or lack of success of four pieces of work, which they were to specify: a successful exam and essay (ie 'received a mark you were pleased with') and an unsuccessful exam and essay (ie 'received a mark you were disappointed with'). Respondents (N=44) were social science and psychology degree students. A clear division has been drawn between the age groups. Regular age students were defined as having been 18 or 19 years old on first registration and mature students as having been 25 years old or more. Intervening age groups were excluded.

RESULTS

The Reasons for and against Success

Over 500 reasons were content analysed, an average of three per question for each respondent[6]. Figure 21.1 shows the five most common reasons per question, and the percentage of mature and younger students making that response. Common reasons were: interest, work, difficulty, teaching, style, coverage and confidence. These reasons are complicated and numerous, but it is possible to identify some similarities. Hard work, revision and research resemble the effort factor. Ability is seldom mentioned, except in exam success (matures 11%, and regulars 19%).

Figure 21.1 The five most common reasons for and against success: by age of student

	UNSUCCESSFUL EXAM	SUCCESSFUL EXAM	UNSUCCESSFUL ESSAY	SUCCESSFUL ESSAY
1	Lack of revision M 66% R 73%	Hard work* M 44% R 69%	Lack of interest M 39% R 38%	Interest M 61% R 62%
2	Too difficult M 28% R 38%	Enjoyed subject M 61% R 58%	Lack of work M 17% R 38%	Research M 61% R 46%
3	Teacher/course inadequate M 39% R 23%	Well taught course M 55% R 42%	Incomplete coverage M 33% R 23%	Style M 16% R 27%
4	Didn't like subject M 11% R 35%	Confident* M 5% R 42%	Not enough time M 39% R 19%	Good instruction M 16% R 23%
5	Did something wrong M 28% R 15%	Questions M 28% R 27%	Lack of knowledge M 11% R 34%	Relevance M 28% R 15%

KEY
M% The percentage of mature students making the response (N=18)
R% The percentage of regular age students making the response (N=26)
* Difference significant at 5% level.

Knowledge and understanding depended on past effort rather than ability. Interestingly, in pilot interviews some respondents said ability was 'given', they assumed a certain level and so did not give it special mention. This accords with research showing ability as a stable explanation consistent with past experience. However, the questions were concerned with high and low, rather than average, performance, so explanations associated with effort and luck should be more likely. Luck was not mentioned explicitly, but many of the external reasons could have been due to chance, eg good or bad questions. Task difficulty was mentioned for the unsuccessful exam, but could be implied by comments on difficult or easy questions. A striking difference between the reasons generated by this open-ended study and the supplied factors of the experimental studies is the frequent mention of interest as a performance factor.

It is noteworthy that effort (lack of work, inadequate revision, etc) should figure so prominently in reasons for lack of success. Although performance is generally helped by success experiences[7], failure can enhance performance if it is attributable to lack of effort rather than to doubts about personal ability. Viewed in this light the extent of self blame could be conducive to enhanced future performance. Also it is striking that the students were able to cite so few fail grades (only 34 per cent of the exam and 4 per cent of the essay grades were fails).

There were some differences in emphasis between the age groups. For the successful exam a greater number of young students mentioned hard work and confidence (significant at the 5 per cent level). The following differences, although not significant, all show a difference of 15 per cent or greater in response between the age groups. In the successful exam more regular age students mentioned tactics. In the unsuccessful exam mature students were more likely to cite lack of technique and inadequate course or teacher, whereas the younger students were more likely not to like the subject. Perhaps mature students study by choice but lack technique. In the unsuccessful essay regular age students were more likely to report lack of work and lack of knowledge than mature students, who more often cited lack of time and distractions like children. In the successful essay more mature students referred to research and sympathetic marking, whereas younger students were more likely to say they had to do well.

It is interesting that mature students were more likely to cite inadequate teaching. Blaming the instruction is not just sour grapes, because teaching is also cited positively (again more mature students) and because there is evidence for a correlation between student evaluations of teaching and course grades.[9]

Internal and external factors in success and failure

The content analysis categories were grouped as internal or external. Internal factors reflected dispositional attributions, eg interest, confidence. External factors reflected situational factors, eg biased marking, encouragement. An index was created to give each student a score on each question, which would indicate internal/external bias. The index is given by the formula $P = \frac{I-E}{I+E}$ where I is the number of internal reasons and E is the number of external reasons.

It had been predicted that internal reasons would be more likely in accounting for success and external reasons for failure. There was no significant difference for P scores between the successful and unsuccessful exam. For both mature and regular age students there was a significant difference, in the predicted direction, between the successful and unsuccessful essay. The findings for the essays support attribution theory, but the results for the exams indicate that nature of task is important. Exams differed from essays in having lower P scores; successful essays stands out as having the highest P scores. Both groups had significantly higher P scores for the successful essay than the successful exam.

Comparing the mature students with their younger counterparts, it was found that, in line with the predictions, mature students had lower P scores, ie exhibited less bias towards internal factors than the younger students.

CONCLUSION

The study showed that the reasons for perceived academic success and failure are complicated and numerous, and a number of differences between the reasons given by mature and younger students were discussed. A numerical index (P) of internal/external bias was calculated. Some support was found for attribution theory in that P scores for success (particularly essays) were generally higher than scores for lack of success. However, the nature of the task was very important, and confirmed the decision to focus not only on actual academic tasks rather than contrived laboratory exercises, but also to include the two main types of academic assessment. In accordance with predictions the mature students generally had lower P scores, ie older students exhibited more bias towards external reasons. This finding could be due to differential exposure to external factors, and life experience may be important here. On the other hand these differences in internal/external bias may reflect different developmental stages in learning to be a student. The longitudinal study in progress[10] will help answer this question.

Clearly the reasons students attach to grades are not random, and the grade itself is evaluated relative to expectations. The extent to which attributional patterns may be predictors of performance probably depends on how unsuccessful events are explained: high achievers are more likely to try harder in the future, taking failure as a sign of insufficient work (like many students in this study). Tutors should handle feedback on relative failure carefully, in the awareness that it could arouse doubts about ability which would inhibit future effort.[7,8]

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22 Individual and Group Performance

PREDICTING STUDENT WASTAGE IN A SCIENCE DEGREE

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INTRODUCTION

In 1972 a CNAA BSc course replaced the old External London Science Degree at the Polytechnic of Central London (PCL). The degree is modular, with all students taking four units in the first and in the second years; in the final year Honours students take three more modules plus a research project, whilst the non-Honours students take four units. With the exception of the project the units mainly consist of 40 per cent coursework and 60 per cent examination marks, although the proportion allotted to coursework is lower for mathematics modules. The majority of students chose modules in life sciences, but mathematics and computing have a smaller intake, and until recently there was also a small number of physics students. An interdisciplinary approach is encouraged, though few students opt for this.

For the first few years almost all the entrants had conventional GCE 'O' and 'A' level qualifications and were to a very large extent those who had failed to gain a university place. Indeed, consistently at least 25 per cent of those doing life science options had previously wanted to read medicine but either were not offered a place or did not achieve the specified 'A' level grades. Over the past seven years, as the concept has evolved of returning to higher education after time out of study, more mature students and those without 'A' levels are being admitted. Since 1977 there has been a small January intake into life sciences, partly composed of those who have just been awarded Open University (OU) credits, and there is also a direct entry into the second year for those with appropriate OU credits.

Figure 22.1 illustrates the growing trend for admitting non-conventionally qualified students.

Figure 22.1 BSc degrees at PCL

YEAR OF ENTRY	TOTAL ENTRY	PERCENTAGE WITHOUT 'A' LEVEL QUALIFICATION	PERCENTAGE OF TOTAL ENTRY WHO GRADUATED
		%	%
1972	127	7.9	74.8
1973	98	10.2	76.5
1974	71	11.2	83.1
1975	78	16.7	77
1976	71	9.9	70.4
1977	72	15.3	*
1978	82	18.3	*

* Still in system

When the proportions in each degree class at PCL are compared with science degree pass lists from universities over a three-year period, a significant difference in the proportions is seen ($\chi^2 = 44.37$, d.o.f. 5, $p < .001$). This difference is entirely contributed to in the lower categories of degree: the proportions of thirds at PCL are significantly fewer and of Pass degrees significantly higher than at those universities, as might be predicted. At the upper end, the firsts and upper seconds are proportionally the same, and many of the high achievers progress to postgraduate degrees.

WASTAGE

The cohort 'wastage' on the degree can be extrapolated from Figure 22.1, varying from 16 per cent to almost 30 per cent. Not all of this is 'academic wastage': some students transfer to other colleges or universities in the UK or abroad, others may transfer within the polytechnic to another discipline; a few of the would-be doctors even achieve their aim to get into medical school. Academic 'wastage' is still a problem though, despite the fact that PCL fulfills Malleson's (1972) criterion of possessing 'sophisticated, well-trained counselling services working within or in close relation to student Health Services'. It is only recently that amidst the plethora of published research on predictors and correlates of 'wastage' in the universities (Malleson 1972), any work has been done on the 'public' sector, and even then much of it has been on colleges of further education and colleges of education (Entwistle & Entwistle 1970; Cowell & Entwistle 1971). This paper reports some initial findings arising from a three-year study of student performance on the science degree at PCL.

ENTRANCE QUALIFICATIONS

The traditional method of assessing a candidate's achievement level by transforming grades obtained at 'A' level into numerical equivalents on a 5 - 1 scale from A to E (Tinkler 1978) tends to give small correlations with degree achievement, with coefficients in the order of 0.29 for males and 0.24 for females (Wankowski 1972).

Such a method of quantifying 'A' level achievement, however, has no provision for the element of a student having had to repeat 'A' level examinations in order either to pass a particular subject or in an attempt to improve a grade. The conventional transformations only take into account the final 'A' level grades satisfying the universities' entrance requirements. On the basis that there is a qualitative factor involved in having to resit 'A' levels, it also ought to contribute towards assessing a candidate's achievement level. The PCL students, therefore, are assigned a score that:

(a) reflects the total number of 'A' levels achieved;
(b) includes numerical equivalents on a 6 - 1 scale from A to O grades;
(c) is negatively weighted according to the number of attempts made to achieve the particular final grades.

Thus PCL student scores have ranged from 1 to 26.

When these scores are correlated with the marks on which the degree class is awarded, a coefficient of +0.48 ($p < .001$) is achieved (sub-sample of 2 cohorts). A smaller, though still significant, correlation of +0.28 ($p < .01$) is found between 'A' level score and first-year total marks (4 cohorts).

PERSONALITY TRAITS

Three entries (1976/7 - 1978/9) completed Form A of Cattell's 16PF at the beginning of their first term. The individual scores were standardized using Saville and Blinkhorn's (1976b) British Undergraduate Norms, science, both sexes, and the first four Second Order Factors (Exvia, Anxiety, Cortertia, Independence) and four Derived Criteria (Neuroticism, Leadership, Creativity and School Achievement) were calculated using Catrell et al's weightings (1970) for combined sexes.

Pearson's product-moment correlations were calculated, using 16PF first and second order factors plus derived criteria, with both 'A' level scores and marks achieved on the science degree.

The role of anxiety in academic performance is frequently given prominence, and Saville (1976a) suggests that a Yerkes-Dodson-type relationship exists between level of anxiety and performance whereby a certain amount of anxiety is facilitative, but too low or too high a level may be debilitating. The students were divided into two groups on the basis of their scores on the II order Anxiety scale, so that those scoring within 1 standard diviation of the mean score for anxiety were labelled 'Median Anxiety', and those scoring above or below 1 standard deviation were labelled 'High/Low Anxiety'. The 16PF scores for these two groups were separately correlated with marks awarded (Figures 22.2 and 22.3) to examine whether they differ in factors other than those contributing to the II order Anxiety scale.

Figures 22.2, 22.3 and 22.4 detail these correlations; personality factors not showing any correlation have been omitted.

The following scales did not show significant correlations with academic performance: Factor A - Outgoing/Expedient
Factor G - Conscientious/Expedient
Factor I - Tender-minded/Tough-minded
Factor Q1 - Experimenting/Conservative
Derived Criteria: Neuroticism, Creativity and School Achievement.

A comparison of 16PF profiles was made between those students who had voluntarily withdrawn during the first year and those who had sat the first year examinations. The only factor giving a significant difference was Q4 ($t = 1.923$, 255 d.o.f., $p < .05$): the 'dropouts' showed low ergic tension and the 'stayers' higher ergic tension.

DISCUSSION

One of the premisses underlying this research has been that GCE 'A' level grades are a poor predictor of achievement at undergraduate level. It is of interest, therefore, to note the highly significant correlation of +0.48 between 'A' level scores and final degree marks in the PCL science degree, and of +0.37 with first-year totals (which do not themselves contribute to the degree class). The weighting of the 'A' level scores described earlier would thus appear to give a better indication of the 'constancy of learning behaviour at two successive stages of formal education' postulated by Wankowski (1972) - ie secondary education and degree level - than the traditional method of transformation.

A discriminant analysis (not reported here) has been carried out to investigate how well the marks awarded at the end of the first year predict the criterion of degree class. It was found that only those who would gain firsts or would fail or withdraw before finals could be adequately predicted, and that the first-year achievement did not differentiate for the intermediate degree classes.

Negative correlations of academic performance with extraversion have

Figure 22.2 Statistically significant correlations between 16PF first and second order factors and degree performance on PCL BSc

	Factor C	Factor E	Factor H	Factor L	Factor M	Factor N	Factor O	Factor Q3	Factor Q4	Anxiety	Cortertia	Independence	Leadership
Both sexes (N=81)		-.22		-.22					-.22		-.25		
Males (N=44)		-.30		-.39*			-.32		-.40*	-.41*	-.33		
Females (N=37)	-.35		-.35										-.33
Both sexes Median Anxiety (N=62)					+.27								
Both sexes High/Low Anxiety (N=29)		-.52*		-.34		+.38		+.36			-.44*	-.39	

The coefficients listed are all significant at the 5% level; those marked * are significant at or beyond the 1% level

Factor C - Emotionally stable Factor E - Assertive Factor H - Venturesome Factor L - Suspicious Factor M - Imaginative Factor N - Shrewd Factor O - Apprehensive Factor Q3 - Controlled Factor Q4 - Tense (The names describe the positive pole of the factor)

Figure 22. 3 Statistically significant correlations between 16PF first and second order factors and first-year performance on PCL BSc life science students

	Factor B	Factor C	Factor F	Factor Q3	Factor Q4	Exvia
Both sexes (N=198)	+.16		+.17			+.13
Males (N=101)						+.19
Females (N=97)		+.20				
Both sexes Median Anxiety (N=129)			+.24*	-.17	+.17	
Both Sexes High/Low Anxiety (N=69)	+.31					

The coefficients listed are all significant at the 5% level; those marked * are significant at the 1% level

Factor B - More intelligent Factor C - Emotionally stable Factor F - Happy-go-lucky Factor Q3 - Controlled Factor Q4 - Tense (The names described the positive pole of the factor)

Figure 22. 4 Statistically significant correlation of 'A' level scores with 16PF first and second order factors and marks awarded in PCL BSc

	Factor B	Factor C	Factor O	Factor Q2	Anxiety	Marks Awarded
All science degree students, end of 1st year (N=185)	+.16	+.16	-.15			+.28
Science degree students with all science 'A' levels, end of 1st year (N=135)		+.17	-.24*		-.23	+.37*
Science degree students with mixed arts/science 'A' levels, end of 1st year (N=50)	+.29			-.30		
Science graduates with final marks (N=74)			-.23			+.48*

The coefficients listed are all significant at the 5% level; those marked * are significant at or beyond the 1% level

Factor B - More intelligent Factor C - Emotionally stable Factor O - Apprehensive Factor Q2 - Self-sufficient (The factor names describe the positive pole of the factor) consistently been reported in the universities (Saville 1976a; Entwistle & Entwistle 1970) and in some 'public' sector colleges (Entwistle 1972). Why should the converse apply in the first year of a polytechnic science degree? Starting with the premiss that it is in general the more introverted who are favoured in secondary education (Fontana 1977; Cowell & Entwistle 1971), it is likely that the able introverts will have been differentially selected for the universities. The more extraverted students with low entry requirements who enrol for science at PCL may then find the particular design of the courses, their method of assessment, and the emphasis on project work and applied aspects of biology, distinctly advantageous. Extraverts, being more self-assured (0-) and happy-go-lucky (F+), may well succeed in the PCL oourse where these traits give a distinct advantage. Does Factor F perhaps touch on something connected with cognitive style, or with capacity for sustained attention?

In the PCL science degree binding decisions about the course do not need to be made at the beginning. There is a wide choice of modules, and this freedom may suit the F+ individual. The introverts, 'creamed-off' by the universities, are more prepared to conform to the discipline of a university course. Thus the institution itself must play a part in student success and failure (Malleson 1972).

As far as the second order anxiety factor is concerned, the expected negative correlation with degree marks is obtained only for males. When the median anxiety group is removed from the analysis, the more submissive (E-), shrewd (N+), sensitive (Cortertia-) and dependent (Independence-) are the students, the better they perform academically.

CONCLUSIONS

Science degree students at PCL are more likely to do well academically if they are non-assertive, trusting, relaxed and sensitive as measured by the 16PF, although if they are too relaxed (Q4-) they may well drop out during the first year. If they are male the better students will be more self-assured, if female they are likely to be less emotionally stable and less venturesome.

As far as their first-year academic performance is concerned, the more extraverted and happy-go-lucky students gain higher marks, and if they are not too little anxious nor very highly anxious they are likely to be less controlled and more tense.

When 'A' level attainments are transformed to a score that also reflects repeated examination, a strong correlation is found between entry requirements and achievement on the degree.

Investigations to date reveal that the requirements of the institution and the design of the course interact with the personality traits, and indicate that future research might fruitfully be focused on the cognitive style of the students.

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23 Individual and Group Performance

UNDERGRADUATE PERFORMANCE IN AN INNOVATIVE MEDICAL CURRICULUM

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DEVELOPMENT OF THE CURRICULUM

In an attempt to remedy some of the widely proclaimed defects in contemporary undergraduate medical education, the Faculty of Medicine in the University of Newcastle, NSW, Australia, has identified the objectives of its undergraduate programme[1]; these are required reading for staff and students. The faculty has subsequently adopted an analytical systematic approach to planning implementation assessment and evaluation in its five-year undergraduate curriculum, which is based on clinical problem solving by students working in small groups, with complete integration of 'pre-clinical' and 'clinical' disciplines. The first annual intake of 64 students has just (December 1979) completed the second year of the curriculum.

AN OUTLINE OF CURRICULAR STRUCTURE

In brief, the first three years of the curriculum are occupied by an examination of a range of clinical problems in adults, grouped mainly according to body-systems. In parallel with this Clinical Problem Solving strand runs a linked strand of Professional Skills in which students learn how for example to interview and physically examine patients with similar problems, thus reinforcing their 'theoretical' learning. The third curricular strand, Group Medicine, encourages students to consider health problems of groups and communities, as distinct from those of individual patients; these aspects are considered in part in the context of Clinical Problem Solving, and in part by project work in the community. The fourth year will consider the special problems of growing up and growing old, and the final year will contain both problem solving and limited but increasing clinical responsibility for patients. More detailed accounts have appeared elsewhere.[2,3]

ASSESSMENT OF STUDENT ACHIEVEMENT

Because assessment has such a profound effect on learning, it is of crucial importance that assessment methods reflect and emphasize the programme objectives, and encourage desired behaviours: eg '... establish effective communication with patients, relatives ...'; as well as failing to reward undesirable behaviours, eg a preoccupation with the disease process at the expense of the person who is ill.

The concept of mastery runs through our entire philosophy of education and assessment; students are graded only Pass or Fail, in an attempt to substitute cooperation in learning for competition for high grades.

ASSESSMENT OF CLINICAL PROBLEM SOLVING

This paper will concentrate on the evolution of three aspects of the assessment of Clinical Problem Solving, describing first what we did and why, and secondly how well (or otherwise) it worked and what modifications we have undertaken to date.

Accommodating different rates of learning

Student progress is assessed both formatively (ie informally, as they go along, while learning is proceeding) and summatively (at the end of a period of learning, for certifying purposes). Because we recognize that students learn at different speeds, the period of learning was scheduled to occupy approximately eight weeks of the ten-week term. At the end of the eight weeks, students could present themselves for assessment (first assessment); if successful, they could spend the rest of the term on elective study of their own choice (with faculty approval); if unsatisfactory they had a period for remedial activity before second assessment. Only if they were still unsatisfactory was a Fail recorded for the term; a final attempt was offered one year later, and failure in this, or in two terms within a defined period, were grounds for exclusion from the faculty.

Summative assessments

Soon after sitting the assessment paper, the students gathered in the lecture theatre for a review session with the assessors (examiners) who displayed on the screen their version of a satisfactory answer to each assessment item. Discussion of the questions and answers was intended to be an educational experience both for assessors and students. In addition, each student had in front of him an (anonymous) assessment script (not his own), and was intended to undertake preliminary marking of the script, as an introduction to reviewing the work of his peers in the light of a set of external criteria. This was also intended to lighten the marking load on the assessors.

Resolving ambiguous responses

As the assessors marked the scripts subsequently, they came across responses which did not enable a judgement to be made as to the student's competence. They had the option of interviewing the student briefly to clear up this particular point (or points); the interview was thus a mechanism for removing doubt, not for further examination of fresh areas of student knowledge and understanding.

EVALUATION AND EVOLUTION

Both students and staff are invited to evaluate all aspects of each term's activities, and this has resulted in a rapid evolution of the assessment system.

Accommodating different rates of learning

In spite of the faculty's original assertion that success at first assessment was likely to be achieved only by the faster learners, that success was quickly accepted by faculty and students as the expected norm. The desire to pass at the first attempt by students who had been selected at least partly on account of their ability to pass examinations, together with the perception of elective study as a right, led to a severe overloading of the learning period, and considerable student anxiety. Higher cognitive activities were sacrificed in favour of factual recall.

In addition, the rapid marking required for decisions about whether or not students were to undertake elective or remedial studies exerted considerable pressure on the assessors, who became less than usually reliable in their marking responses.

The faculty has now moved first assessment to the end of each term, thus creating a buffer period between learning and assessment during which consolidation can take place, and allowing marking to take place during the vacation under less pressure. The second assessment has been moved to the end of the academic year, at which time decisions about student progress are made.

This change in pattern has proved acceptable, and there is now a less frenetic consideration of student performance which has been appreciated by everybody.

Feedback and peer review

The review sessions turned out to be emotionally charged confrontations, with the assessors on the defensive, and sometimes rightly so. The students were able to demonstrate ambiguity and poor quality of some of the questions, and lack of range of some of the 'model' answers. Never before had these students had the opportunity of taking the axe to their examiners in person, and some were clearly venting the pent-up aggression and anxiety of years. Faculty persisted doggedly with these sessions for four terms, in spite of the fact that no reduction in assessors' marking time occurred. The student markers were often over-severe and found it difficult to resolve ambiguity.

We have now dropped the peer review aspect (which occurs elsewhere in the curriculum as well), and the review sessions are chaired and documented by the students themselves. They provide the assessors with information about ambiguities in the questions, and forward any alternative responses which command strong support from the student body. The assessors may and do use this further information to modify their expectations while marking the scripts, but the chief improvement has been in helping students to achieve a better understanding of the relationship between question and answer.

Resolving ambiguous responses

Misuse of these sessions by some assessors who used them as a fresh assessment, together with demands for interviews by students who were clearly unsatisfactory on the basis of their performance on the written paper, led to their temporary abandonment. The effect of this was dramatically to increase the number of students judged unsatisfactory at first assessment, since, if the assessors were in doubt, they had no option but to ask the student to appear for second assessment.

The need for this clarifying mechanism became clear to both staff and students, however, and it has been reintroduced. In an attempt to improve its reliability, the assessors stick very closely to the areas where the questions in the written papers have identified ambiguity or localized areas of failure to demonstrate competence. One assessor asks the question while the other observes. The interviews now occur two or three weeks after the written assessment; as a result, anxiety levels are remarkably low, the conversations are usually very civilized, and the ambiguity over the student's performance is satisfactorily resolved, one way or the other.

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24 Individual and Group Performance

THE COURSE JOURNAL

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In departments of education the essay has for many years been the accepted method of assessment for students' theoretical knowledge. Whilst demonstrating the student's ability to organize material and present it logically, an essay does not adequately demonstrate how the students will apply their knowledge into the teaching situation, nor does it take into account their subject specialization. These problems became more apparent in the late 1960s in Cardiff when continuous assessment Post-Graduate Certificate in Education courses were offered to intending and serving teachers in the further and higher education sectors. An alternative to the essay was suggested by Professor C.H. Dobinson, CMG, Emeritus Professor of Education at the University of Reading, which lead to the adoption of the course journal.

WHAT IS A COURSE JOURNAL?

A course journal is a written account of course work kept by each student. It also includes handouts and other material of use to and collected by the student.

The expressed objectives of the course journal, presented to the students on day one of the course, are as follows:

(a) To demonstrate in writing what you have learnt from each lecture by commenting on their contents in relation to your own teaching/subject specialization.
(b) To demonstrate in writing what you have learnt about teaching and the theory of education from your reading on the course.
(c) To record in writing your comments on the practical course work including practice lessons given by yourself and other students during practice lesson periods and teaching practice.
(d) To demonstrate your ability to collate material and present it in a logical fashion.
(e) To demonstrate in writing your ability to express yourself clearly and competently.

CONTENT OF COURSE JOURNALS

The following material is flied in the course journals:

(a) Handouts issued at all lecture and seminar sessions.
(b) The students' comments on each lecture or seminar, his/her own and other students' practice lessons, practical exercises and visits, supplemented by appropriate references to the literature.
(c) Relevant cuttings and extracts from recognized sources, such as journals, magazines and newspapers.
(d) Lesson plans and AV aids produced for practice lessons and teaching practice.
(e) A teaching practice evaluation project and various exercises such as writing objectives from a given syllabus and production of examinations based on the re-written syllabuses.

(f) Any other material which the students consider will be of value to their own future teaching.

DISCUSSION

Practical Arrangements

Contributions to the course journals are filed in an A4 lever arch file divided into appropriate sections, with an index. The entries are compiled on a day-to-day basis and submitted daily to the student's tutor for appraisal and comment. At regular intervals the complete journal is submitted to the tutor for a written assessment and to provide a check that the work is fully up to date. Each student attends a weekly tutorial so that work can be discussed with the tutor. Tutors also make written comments on each entry in pencil, which can be erased after the course.

The Assessment Procedure

Each tutor becomes quickly aware of the level of students' comprehension of the course material and their ability to demonstrate and express themselves clearly in writing. Students with spelling and grammatical problems can be helped at an early stage to improve. Tutors can reject entries if at an unacceptable level and the students will be advised to re-write the entry. In order to produce entries students are obliged to attend all timetabled sessions. As students are encouraged constructively to criticize topics, theories presented during lectures, and the performance of individual lecturers, the tutors can obtain their evaluation of the course. This has been of great help in modifying the course in accordance with students' needs and expectations.

It may be argued that tutors are subjected to a heavy workload in dealing with the daily entries. In practice it has been found that the continuous spread of work requires no more time than reading lengthy essays at prescribed intervals. The immediate feedback obtained by both tutors and students overrides the considerations of daily commitment made by all involved.

The course journal method is unreservedly concerned with obtaining continuous assessment of students' work. However, at the end of the course the student is left with a useful source of reference for the future (Hurlow 1979).

Evaluation of the Method

At the end of each course approximately one third of the journals are submitted to an external examiner for moderation. Past examiners have been unanimous in their praise for the method and for the standards achieved. When an examiner is unfamiliar with the method it has been found important fully to discuss the objectives before submission of journals. Research within the department by Hurlow (1979) has indicated that although many students experienced initial difficulties in producing acceptable entries they endorse the method as a means of continuous assessment. The improvement in writing style and comprehension is apparent in all types of teaching specialization. This is due to the rapid and effective feedback.

No claim is being made that the method is unique to Cardiff education courses. For example, Cox, Rea and Robinson (1977, pages 68-69) report on a course diaries variation used in medical education and how students demonstrated a substantial change in writing style as the course progressed. Hounsell and Ramsden (1977, pages 136-139) discuss the use of essays as tools for evaluation and explore the reactions of academic staff to their use. From this paper it is possible to surmise that many problems can be overcome by the functional use of course journals. An introductory account of the Cardiff course journal and its role in assessment has been reported by Mitchell (1974, pages 18-22). Since that paper was written the method has been adopted for use with the PGCE Primary and Secondary courses and for MEd options in the taught programme. The School of Pharmacy have also commenced using course journals for their undergraduate courses.

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25 Individual and Group Performance

CRITERIA FOR ESSAY MARKING

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With an increase in the amount of continuous assessment in undergraduate courses, teachers in higher education are becoming even more concerned about the inconsistency of essay marking and the difficulty of using essays for teaching purposes as well as for assessment. This is true in all disciplines but is particularly marked in some scientific areas which do not have a tradition of essay writing.

This paper describes the development and evaluation of materials designed to assist both teachers and students. The materials, called 'assignment attachments', were developed with four aims in view:

1 To assist staff in the marking of student essays.
2 To help students gain as much benefit as possible from the marking of written work.
3 To help promote consistency in the marking of essays and agreement between markers over the marks awarded to essays.
4 To act as an agent of staff development by promoting agreement among staff about the criteria that are important in the marking of student essays.

An assignment attachment is a form which lists a chosen set of criteria, and these constitute the basis for assessing a piece of written work in a given subject. Each criterion is represented by a pair of opposed phrases: for example, 'Correct citation of references v incorrect citation of references'. Markers rate a student's performance on each of the criteria by placing a tick on a scale of 4 or 5 gradations, the upper and lower units of which are defined by the opposed phrases.

About two dozen tutors at two Australian universities have now used assignment attachments in courses which range from anthropology, history and education to environmental science and veterinary studies. Several hundred students have received completed assignment attachments with their returned essays and assignments.

MARKING ESSAYS: GUIDANCE AND BENEFITS

In order to evaluate how successful the attachment had been in achieving these two aims, we first conducted interviews with both staff and students and then administered a questionnaire to seventy who had received completed assignment attachments with their essays. Without exception, the tutors that we interviewed reported that they found the existence of a defined set of criteria useful in marking assignments. Tutors mentioned the following advantages:

1 They were encouraged to consider aspects of the essay which they might otherwise have neglected.
2 The attachments made them aware of the common criteria used in the grading of essays in a particular course.
3 They could assess assignments in the knowledge that students had been encouraged to assess their work themselves according to the standard criteria.

Students also reacted favourably to assignment attachments: in response to the questionnaire 80 per cent of the students stated that they found them useful. Over three quarters of the students indicated that the attachments:

1 Helped to explain the grade awarded for each assignment.
2 Indicated which aspects of the essay were good and which were deficient.

Two-thirds of the students felt that the attachments:

3 Provided useful information for the preparation of further assignments.

Most students felt that assignment attachments generally gave them more information about their assignments than would otherwise have been the case.

Students' answers to detailed questions illuminated two issues which need to be considered by tutors using attachments. Firstly, students continue to place considerable value on individual comments from the tutor. There is a demand that attachments should not be substituted for comments that provide individual information on each assignment; they should be used as an adjunct to written comments. Secondly, there is a demand for completeness: many students attach considerable importance to the tutor ticking all items on the sheet. Some students commented that if they are trying to improve their work in response to deficiencies previously noted on attachment forms, they should be able to assess their progress by comparing the previous and later markings of the relevant items.

MARKING ESSAYS: CONSISTENCY AND AGREEMENT

In order to investigate this aspect of the evaluation of assignment attachments it was necessary to set up a controlled situation. We did this with staff of a university department which was concerned about the variability of marking by tutors. Eleven tutors volunteered for the project; these ranged from the head of department to several postgraduate students who tutored in the course. All participants in the project first marked the same set of fifteen answers to an essay question set in the 1978 first-year examination paper. The participants were then divided into two groups, matched as nearly as possible according to the mean and standard deviation of marks awarded to the first set of fifteen essays.

All participants then marked another set of essays (twenty) - one group using assignment attachments and the other marking without. The purpose of this stage of the evaluation was to see whether assignment attachments helped improve the amount of agreement between tutors marking the same essays.

Two months later the markers re-marked the same set of essays; the group which had used assignment attachments once again used these forms while the other group did not. The purpose at this stage of the project was to see whether the use of assignment attachments improved the reliability of the marking of individual tutors. Statistical analysis of the data from this part of the evaluation revealed that assignment attachments had not been successful in promoting either consistency in each markers' performance or agreement between markers over the marks awarded to essays.

Inconsistency in marking is a well known and well researched problem. Although assignment attachments do not provide any sort of solution to this problem, our findings indicate that use of assignment attachments may contribute to a more precise definition of the problem itself.

Inconsistency or disagreements in marking may be due to several factors. It may be due to uncertainty or disagreement about overall standards (eg What is worth an 'A'?), the contribution of different aspects of an essay to the overall grade, or the standard applied to individual aspects of each essay (eg What constitutes 'good presentation of ethnographic data'?)

Preliminary analysis of completed assignment attachments indicates that it is the last of these items which is responsible for the variation which occurs on tutors' re-marking of essays. The assignment attachment seems, in cases of inconsistent marking, to provide an indication of the particular aspect of the student's performance that has caused inconsistency in the re-marking of essays. The assignment attachment also provides information about which criteria have caused disagreements among markers in their assessments of written work.

AN AGENT FOR STAFF DEVELOPMENT

Assignment attachments are intended to complement and help existing assessment procedures in any department and for any particular course. However the criteria appropriate to the assessment of essays will vary from subject to subject and from course to course. It is therefore important that the attachment be designed specifically for each course in which it is to be used. Selection to the specific criteria to be included on the assignment attachment should meet with the approval of all those who will be using the form. In the process of reaching agreement about the criteria to be used staff will discuss exactly what it is that they are trying to assess.

Assignment attachments are also useful in helping to focus discussion between tutors on the cause of inconsistency and disagreement in essay marking. By providing a structure which elicits more information about the basis on which tutors decide on a grade they can promote a more thoughtful exchange between tutors on the way they assess.

CONCLUSION

Our findings show that assignment attachments are a useful and practical aid in those forms of assessment which are concerned with essays or assignments. Both students and staff agree that they can help to clarify the reasons for the award of a particular grade or mark. The use of assignment attachments does not contribute to a solution to the problem of inconsistency in marking. However, they do enable markers to pinpoint where their differences lie.

NOTE

Part of this project was designed in collaboration with Mr Richard Bell, whose assistance is gratefully acknowledged.

26 Course Evaluation

COURSE REVIEW AT NEWCASTLE UPON TYNE POLYTECHNIC

P. Torode Newcastle upon Tyne Polytechnic

THE NATURE OF COURSE REVIEW

The first, and perhaps most fundamental question when we talk of course evaluation and review, is what are we actually concerned with? When the Council for National Academic Awards considers a resubmission, and thereby becomes drawn into a consideration of the performance of the course over the preceding five years, it knows what its criteria are. It seeks to be assured that the academic standards of the course, about which it would have originally satisfied itself at the time of initial validation, have been maintained, and are likely to continue to be maintained over the following five years; it seeks to be assured that the resources available for the course are sufficient and appropriate, and that any assurances the college may have given in this respect have been met; it looks for evidence that the course is not stagnating, that the course is alive and healthy and that the course team are alive to external developments which might give rise to the need to give further consideration to the syllabus.

Although the maintenance of academic standards is a crucial element in any institutional system of course review, other considerations will clearly be present which, whilst not necessarily in conflict with academic standards, will push other priorities to the forefront. Institutions, obviously, will want to be assured that resources are being efficiently and economically managed. Whilst academic standards and the efficient use of resources are not contradictory, as external factors put more and more pressures on institutional resources, course leaders may feel that they are being 'pushed' on resources to a point at which academic standards may become threatened.

This leads on to another aspect of the same fundamental problem: What constitutes a 'good course'? Is it sufficient that there is evidence that academic standards are being maintained? Or should it be marked out of ten for the extent to which it conforms to some pre-determined, approved value of staff-student ratios or 'unit costs'? Is the institutional review machinery to be a kind of pressure group in the polytechnic executive to obtain resources for courses, or is it a means of pressure on course leaders to evolve more economical styles of course operation?

Is a course with a relatively high level of wastage necessarily performing badly, or is a high non-completion rate an inevitable feature of certain types of courses? If it is to be taken as evidence of malaise, is the problem in the selection procedure, or the operation of the course itself? Is evidence of high demand necessarily an indication of a 'good' and healthy course?

PRACTICAL PROBLEMS

There are some more practical, and less 'philosophical' problems inherent in a system of institutional course review. It is a long process - results cannot be expected overnight. Firstly, the kind of problems of criteria which I have been talking about have to be considered, and decisions made about how the job is to be done. Enormous quantities of data then have to be collected, assimilated and critically assessed. In such assessment, and in drawing conclusions based on it, dialogue must take place with the course teams; even if complete agreement is reached on what action should be taken, the inertia in the system inevitably means a time-lag before decisions are put into effect. Then the whole cycle has to be repeated to assess the extent to which changes have been made, and the significance of these. Furthermore, many of the problems identified may be of a general character, rather than specific to an individual course, and therefore generate proposals of a general policy character, which need consideration through other aspects of the committee system.

Closely related to this problem is the enormous investment of staff time which the institution has to make - the time both of those charged by the institution with the responsibility of carrying out the review, and those concerned with the preparation of reports on the courses and being subjected to the review. Newcastle upon Tyne in fact currently operates a total of some 200 courses, of which 25 per cent are at first or higher degree level. Of these courses more than half have a mode of attendance other than full-time and sandwich.

The machinery necessary to carry out this mammoth task necessarily needs substantial support from the non-teaching staff - particularly the academic administration. This means further demands on the system - and creates the danger of the sheer organizational effort involved obscuring what should be the essentially academic character of the exercise.

Another problem concerns the skills necessary to carry out the review exercise. Clearly this cannot be done on the basis of subject expertise alone, in that, by and large, the people with the subject expertise directly concerned with a particular course would be the people who would constitute the course team. It is necessary, therefore, to develop, amongst key groups of staff, the expertise necessary to make intelligent assessments of the progress of courses in subject areas quite foreign to their own.

The Newcastle System

The decision to establish a formal system of regular course evaluation and review at institutional level was taken by the Academic Board of the polytechnic in October 1975. It should be said at once, unashamedly, that one of the major lines of thought leading to this decision concerned accountability. Departments and course leaders dispose of very substantial amounts of polytechnic resources; furthermore, the quality of the service which they provide to the students who pass through their hands, has a very significant effect on the lives of these students. Departments and course leaders should therefore be accountable to the institution centrally for the courses which they operate, and a formal 'course review' machinery was considered necessary for this purpose.

This decision resulted in the establishment of a central course review subcommittee, which is a sub-committee of the Academic Planning and Development Committee. It has a membership of about 14, comprising a mix of 'ex officio' and elected places, representative of the various faculties; it is chaired at assistant director level.

The sub-committee operates basically by requiring course leaders to submit to it an annual report on each currently operating course. These reports are grouped together by heads of department and submitted via the Faculty Board chairman. The head of department and faculty chairman are each invited to submit any general, or specific comments on their groups of reports.

Course leaders are given guidance as to the factors which they should comment on, and the kind of data which they should provide, but within these broad guidelines are encouraged to compile their reports as they see fit. The reports are then considered by the sub-committee, and, arising from this consideration, a form is then completed for each course which attributes a code to each of the standard factors which the sub-committee examines. The list of factors which the sub-committee currently uses, is as follows:

Enrolments
External examiners reports
Course administration
Course development
Rationalization
Student feedback
Employment of students on completion
Staffing matters
Wastage rates
Options
Examination results
Course structure
Re-submission results
Student placements
Accommodation and facilities
Course SSRs

Examples of the codings used in relation to these factors are:

A = Satisfactory
B = Problem identified
C = More information required
D = Under review by department

These coded forms are then used for what is arguably the most important and constructive aspect of the work of the sub-committee - a dialogue between representatives of the sub-committee and the head of department, the course leader and his course team, from which it is hoped that agreement will be reached on any necessary action to improve the performance of the course. This part of the sub-committee's work - which usually takes the form of members of the sub-committee visiting the department to meet with the staff concerned with individual courses - has done much to establish the 'credibility' of the course review arrangements among the staff of the polytechnic as a whole, and to enable course teams to realize that it is something from which they can gain real benefit. For this purpose, the sub-committee splits into working groups, which undertake visits to departments, and report back on the outcome of these visits to the full sub-committee. An annual report on the overall work of the sub-committee is made to its parent body, the Academic Planning and Development Committee.

OPERATING THE SYSTEM

So, after almost incalculable man-hours have been devoted to this exercise in recent years, and terrifying volumes of paper generated, what has come out of it, which may offer some guidance to us - and possibly others - for the future? On a practical, positive level, a number of specific problems of individual courses have been identified, and action to improve the situation agreed and implemented, with some evidence to indicate improved performance as a consequence. These problems have ranged from the directly academic - mainly identified through looking at examination results and external examiners' reports - to resource and organizational matters. A number of problems have been identified which affect a range of courses, and which therefore require a solution that goes beyond recommendations in connection with an individual course. An example of this is a study which has been made of the extent and causes of wastage rates, and in particular, the relationship of selection procedure to subsequent drop-out. Without going into detail, the relationship appears to be a strong one, and arising from this, the

Course Review Sub-Committee sponsored - with the help of people professionally skilled in this field - a range of seminars for course leaders and admissions tutors, on selection procedures, and these have been widely welcomed in the polytechnic.

Another group of problems identified and studied as a result of the work of the sub-committee concerns 'service teaching'. One aspect of the problem concerns the difficulty of developing a strong, stable and committed course team, in circumstances in which members of the team may be drawn from a range of departments some of whom may give their service commitments a comparatively low priority, and may make frequent changes in the individual staff carrying out the servicing. From the point of view of the departments providing service, difficulties arise from fluctuations in the number of students enrolled to a particular year of a course, or option within it, which obviously cause fluctuations in the extent of demand for service, over which the department concerned has no control. The course review sub-committee has been able, through its consideration of these problems, to make a number of specific proposals to improve the situation, and has been influential in developing polytechnic policy generally in these regards.

A further problem concerns a number of courses in the polytechnic which lead to the examinations of a wide variety of external professional bodies. A few of these permit internal examining by the polytechnic, but the remainder, as well as laying down the syllabus, set and mark examinations, and determine pass rates - in some cases, one suspects, independently of the quality of performance in any particular examination. Such bodies seldom or never provide a report to an institution on the performance of its particular students, or effectiveness of its particular course. The best that is offered is often a report on a national basis giving overall pass rates and very general comment on individual questions. In some cases, departments have to wait for students to inform them of their results, since official reports and pass lists, if they are issued, appear long after students are informed, and the institutions may not be officially informed otherwise. These factors militate aginst any kind of effective course development, as staff and students are to a large extent 'working blind'. Change of examiner can bring about quite dramatic changes in the pattern of examining, of which courses, staff and students have no warning. This would seem to be an area where combined action of the teaching insitutions involved, in making appropriate representations, might assist in breaking down what might, in some respects, be regarded as the professional conservatism of institutions in relation to professional education.

As far as resources are concerned, the sub-committee has, in a number of instances, following identification of a problem, been instrumental in securing necessary facilities, eg specialist accommodation, additional part-time staffing - or at least in gaining an official institution level recognition of the need for such facilities. In other cases, the sub-committee has been able to assist in resolving problems by advising on the more rational and efficient use of resources.

The sub-committee has done much to establish the principle that there should be, for each course, some systematic arrangement for gathering, and giving consideration to, the views of students on the course. The sub-committee asks course leaders for evidence of such 'student feedback', without being prescriptive about the machinery which should be used for this purpose.

As a result of the work of the sub-committee, a number of working parties have been generated to focus more detailed attention on various matters related to its work - eg student wastage and recruitment, course structures, and examination and assessment methods.

GENERAL POINTS

In general, firstly, we now have a core of staff, who, through service on the sub-committee, have developed a substantial expertise in the review and evaluation of courses outside their own subject areas. This has two significant advantages, in that it helps to develop the overall unity of the institution, and it enables the best expertise developed in some areas of the polytechnic to be made available across the polytechnic as a whole. Secondly, we have established the principle of systematic annual course review, throughout the polytechnic, such that, despite some initial caution, the majority of course leaders, and staff generally, now welcome the discipline of producing annual course reports, and welcome the opportunity for constructive dialogue with the sub-committee, aimed at gradual improvement of course performance. And thirdly, we have, if nothing else, created a 'safety net' which prevents major problems in the operation of individual courses going undetected for years then forcing their attention on the institution by assuming crisis proportions.

We now have a body of experience which will be of considerable value in meeting the current external pressures on us to scrutinize and account for our activities perhaps more rigorously than we have done in the past. These pressures come from a number of different sources. On the one hand, there is the recently issued Council for National Academic Awards statement on 'Developments in Partnership in Validation', with its heavy emphasis on the maintenance of academic standards, as well as the initial act of validation. On the other hand, there is a context of scarce resources, arising from the general economic climate, and the policies of central government. This may well mean that, to avoid stagnation, and make room for continued dynamic development, each new addition to the academic programme may have to be accompanied by the phasing out of other activities, which are failing to live up to standard, or which have passed their period of usefulness.

One particular problem which we are taking steps to solve is that it would not be possible to continue indefinitely with the present arrangements because of sheer demands in time and energy made on the members of the course review sub-committee in dealing adequately with some 200 detailed course reports each year. This problem is being dealt with in the context of a general re-organization of the academic structure of the polytechnic. The new structure puts more emphasis on the importance of the faculties, and considerably develops their role. In this context, in the future, much of the detailed work of scrutinizing the annual course reports will rest with the faculties (with representation from the central committee). The central committee will then receive each year, from each faculty, a generalized report on all the courses for which they are responsible, drawing attention to any general or specific problems identified, and making recommendations for any appropriate remedial action thought necessary. These faculty reviews will be supplemented by a detailed review by the course review committee of each faculty in turn, such that each faculty would come under the microscope broadly in accordance with a quinquennial cycle. This seems to us to preserve the essentials of the system, whilst reducing the pressures of the key personnel to manageable proportions, and at the same time enabling the functions of the central group to be extended to a course and subject review committee.

27 Course Evaluation

COURSE EVALUATION AT SUNDERLAND POLYTECHNIC

Harry Webster and Colin Biott Sunderland Polytechnic

Fortunately the repeated and often dramatic emphasis at national and local levels on the evaluation of course performance in terms of cost-effectiveness has now been counterbalanced by the new emphasis on course 'appraisal' by the CNAA in its 'Developments in Partnership in Validation'. Yet the frequent separation in the economic and educational aspects of evaluation is symptomatic of the central conflict inherent in any attempts to establish an internal system of course evaluation. On the one hand, the managers of an institution, including in varying degrees the chairmen of course committees and course leaders, tend to emphasize organizational and economic matters. As R. Alexander puts it: 'their interests may be distinctly restricted to the solution of management problems, and, possibly, the maintenance of their own position in the college power structure' (Alexander 78a). On the other hand, the course teachers and the course students take a very different viewpoint, emphasizing the quality of the teaching and learning which takes place or does not take place in the course.

This structural conflict is the context within which internal evaluation takes place. Whilst external evaluators can conduct research in which they can create their own terms of reference, define their own problems and write their reports for the wider academic community, internal evaluators find themselves having to relate their work to this framework of conflict or potential conflict. Internal evaluators, 'insiders', have responsibilities to their fellow participants, both staff and students, in terms of the issues they identify as important. Their reports are for the participants (including, where appropriate, teachers who are also managers) and are intended to meet the needs of those participants or sections of them. At the same time they are subordinates, indeed, ultimately, employees of management.

In order to provide a realistic consideration of the practical problems of course evaluation, we will dramatize this conflict by presenting the two sides of it through the experience in the Faculty of Education of Sunderland Polytechnic of two people who are structurally on opposite sides.

A MANAGEMENT PERSPECTIVE

After introducing a climate of self-monitoring by establishing a faculty research project into the curriculum and organizational change through which the newly formed faculty was then passing and subsequently encouraging individuals and groups to direct their research efforts towards evaluation, eventually, when the time seemed ripe, the dean of the faculty proposed some guidelines for annual course evaluation to the (two-thirds elected) Faculty Development Committee. After two long discussions resulting in a large number of additions and modifications the guidelines were recommended to and accepted by the Faculty Board to come into use in 1977-78 on the understanding that they would be modified in the light of the experience of course committees. The guidelines in Appendix 1 (p.180) are the present state of revision in the light of experience and the product of an inter-faculty working party which is recommending them for acceptance by the whole polytechnic.

The development of criteria and methods of evaulation have, of course, only just begun in some of these categories but in others some progress has been made. For instance, in relation to 'Student Progress' we have learnt enough of the difficulties to decide to attempt to establish a national inter-polytechnic project on the nature, incidence and causes of student non-completion of full-time and sandwich degree courses. The question of how illuminating and how useful the results will be at both the managerial level and the grassroots level illustrates the central issue of this paper. We hope it will provide the kind of illumination which will increase tutors' awareness of the need to consider alternative methods of recruitment, induction, teaching, learning and assessment or alternative kinds of relationships between staff and students, staff and staff, and students and students. In the case of 'Resources', the methods based on polytechnic and university norms have produced obvious benefits in terms of monitoring provision. But the danger of over-emphasizing economic criteria is particularly evident in the case of staff-student ratios, since the choice of teaching methods can be over-influenced by them.

The central issue of this paper, however, focuses especially on 'Feedback' from course teachers and course students, the grassroots. In this category we can see the danger of teachers feeling that they have a policeman looking over their shoulders as they plan, teach, assess and evaluate. We have to recognize that the benefits so far are limited and yet some insights have been gained and some improvements have resulted in course structure, in pedagogy and in staff development. For instance, the regulations of a degree course have been changed to increase the range of student modular choice because more than a quarter of the first intake of students found the existing regulations too restrictive. With the aid of a 'critical friend', a research officer, a team of tutors have monitored and changed their implementation of an innovatory syllabus (Practical Teaching Skills) and feedback from their students is now beginning to influence what actual happens in that module. Where a majority of the students in one quantitative module experienced considerable difficulty, additional individual and small group tuition has been provided. Where all the students, through their representatives on the staff-student consultative committees of the course, found the teaching methods of a tutor too restricted, it has led to the involvement of another tutor and increased attention to the staff development of the former. Although the degree of course evaluation based on feedback from teachers and students can be said to fall far short of what it should or can be, the guidelines have contributed to creating a climate in which course evaluation is developing. It is worth noting, however, that the staff-student consultative committees, on which students are in a majority of roughly 2:1 and on which the role of staff is largely clarificatory, have been crucial during this period of testing the guidelines.

A GRASSROOTS PERSPECTIVE

The grassroots perspective is that of a course teacher whose evaluation activity began some years prior to the recent CNAA challenge. It is based on the experience of an insider's four-year study of a CNAA BEd Honours degree. This study, which focuses on the critical processes of the programme rather than questions of effectiveness, is providing an opportunity to explore some possibilities of internal democratic evaluation. It has been concerned with mutual professional accountability rather than external accounting. The intention here is not to discuss methodology (see Biott 1980) but to reflect on possible implications of the proposed CNAA changes in validation procedure. The implication is that those institutions which have worked with CNAA over the years have been trained, through that process, to such a degree of socialization and commitment that they can be to some extent self-policing. Claims of increased participation beg questions of new kinds of control. Some questions will need to be asked inside institutions.

Alexander maintains that internal evaluation at and between various hierarchic levels can be as much about 'institutional politics and interpersonal relations and sensitivities' as about courses, and that each college therefore needs to develop its own 'style of evaluation' which 'has to reflect the particular circumstances, contraints, opportunities, resources and so on prevailing in the college at a given time' (Alexander 78a). The questions he proposes should be asked of institutions (Appendix II) are based on his scepticism about imposing prescriptive guidelines. His questions therefore provide a useful framework for the issues to be raised here.

Much of the most honest and useful evaluation is never written down. Some of it is personal and introspective, some involves teaching teams who work closely together and some involves students. Some has involved a 'critical friend' from outside the team. Much of it intrinsically involves a high degree of confidentiality. Problems have been identified and solutions proposed without recourse to committees. The extent to which energy is generated for more elaborate evaluation seems to reduce as staff become involved in more modules and different courses.

If the evaluation impetus comes from hierarchic committees, procedures can be devised to keep them happy. A similar process has been documented in an anthropological case study of 'moiety' structures in educational innovation by Wolcott (1977). Such procedure will do little or nothing to improve internal communication and monitoring. The sense of audience in external accountability may lead to a masking of divergence which can be already evident at the validation stage. This may also apply in internal reporting to course committees, from course committees to faculty boards, to the polytechnic approvals committee or to CNAA. Reports will be written to conform to conventions of deductive rationality and be positive enough to assure the committee that everything is in hand and changes will follow. For instance, a routine evaluation of a module suggested more plenary sessions. The next intake of students asked for less plenary sessions and more group work. It could be possible to continue the annual change without tackling what may be a more basic issue.

Some additional questions arise:

1. It will be difficult and possibly inappropriate to write reports which reflect a pluralism of values. What use would they be for committees? Could they provide a step to action? Could they provide insights, increase awareness or challenge complacency?
2. What of reports which convey uncertainty? Stake (1977), for instance, has said that 'programme staff or people in the community may be uncertain. Audiences should feel that uncertainty. More ambiguity rather than less may be needed in our reports. Over simplification obfuscates.'
3. Routine evaluation which over-simplifies is more likely where the CNAA challenge has preceded initial exploratory forays into evaluation. Could a scheme such as that at Didsbury (Alexander 78b) have developed as a result of the new CNAA 'Partnership in Validation' or does such a development depend on individual initiative and the gradual involvement of others? How

long can an institution sustain such a grassroots scheme?

4. Evaluation should improve internal communication. Models such as those of democratic evaluation (MacDonald 76) and responsive evaluation (Stake 77) provide guiding principles to be tried and adapted in specific contexts. If internal communication is improved, will the challenge of communicating with 'outsiders' be more comfortably faced and messages more honest and realistic?
5. A course has an historical and social structural context. A case study of the planning stages at Sunderland has provided essential background for understanding our implementation process. Should more attention be paid to that process?

These questions reveal a scepticism about a new era of evaluation rather than a rejection of it. The assessment of students and the role of the external examiners are essential components. We need to know what skills and what knowledge are learned but we also must try to find out what it feels like to be learning and teaching them and the effect, if any, on basic attitudes to living and learning.

QUESTIONS

This paper has deliberately emphasized the conflict or the apparent conflict between the managerial and the grassroots perspectives. Is it possible or desirable to resolve this conflict or to diminish it? Is the conflict and consequent tension the normal condition of any polity, the inevitable conflict between the interests of the individual and of the institution whether it be college, city or nation? Can this tension be accepted and used constructively to improve not only our courses but the performance of management? Can management evaluate its own performance in relation to its approach to and its responses to evaluation? Would external evaluation be particularly valuable at this level?

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APPENDIX I

REVISED GUIDELINES FOR COURSE EVALUATION

1. STUDENT PROGRESS

a) Admissions	Number of enquiries, applications and enrolments for the course, including an analysis of candidates' qualifications, ages and relevant experience. An evaluation of publicity and recruitment.
b) Wastage	Analysis of figures of and reasons for withdrawal, failure and transfer for each year of the course. Studies advisers/personal tutors should therefore record the reasons given by the students and their own judgements of the causes in each case.
c) Examination Results	Examination successes (with grades of classifications), failures and resits for each year of the course and its totals. Comparisons should be made between subjects in the same course, and, if possible, wider comparisons within the polytechnic or between institutions.
d) Employment and Further Study	The rate of employment and further study compared with national norms and the extent to which these outlets are related to the nature of the course.

2. FEEDBACK

a) Examiners' Reports	A summary of their main comments should normally be sufficient. Specific problems, however, should be highlighted.
b) Student Feedback	Feedback from students from course staff-student consultative committees, student representatives on the board of studies and other sources including ex-students, eg interviews, questionnaires, letters and conferences.
c) Employer's Feedback	Feedback from employers and the relevant professions including contradictory evidence.
d) Staff Feedback	Feedback from staff based on their experience of teaching and evaluating students' responses in class, as individuals and in the form of assignments. Reference should be made not only to the nature of the knowledge, skills and attitudes being taught but also to the methods of teaching, learning and assessment being used. Use may be made of interviews, discussions and questionnaires. Studies advisers/personal tutors will also provide information in students' files and in discussion.

e) Educational Research	Research into the educational effectiveness of the course in attaining its own and the polytechnic's aims and objectives by the use of particular curricula; modes of organization; teaching, learning and assessment methods; and other devices. The Faculty of Education Evaluation Group is available to advise boards of studies on alternative approaches to educational evaluation through the dean of the faculty.
3. RESOURCES	
a) Staffing	Student-staff ratios, FTEs and hours of staff committment for the course issued by the Staffing Policy Committee are to be included. The need for staff development and consultancy/research development, redeployment or additional staffing should be specified.
b) Accommodation	Any problems arising should be specified together with proposals for improvements. These improvements should be categorized as (i) essential to safety or health, (ii) essential to teaching or (iii) desirable - and justifications given.
c) Equipment and Materials	An assessment of the supply of equipment and materials over £500 required during the next three years should be categorized i, ii and iii (above) with justifications given.
d) Library	An assessment of the provision of books, journals and other materials and of facilities.
4. OTHER ISSUES	Any other specific issues or problems not covered by this framework should be included here.
5. SUMMATIVE EVALUATION	
a)	The appraisal by the Board of Studies of all the above sections should be designed to ensure that a summative evaluation is as full as possible in relation to the design of the course, its aims and objectives and methods of teaching, learning and assessment. The Board of Studies and Faculty Board should then be prepared to consider whether the course is still fulfilling the need it was established to fulfil. This section therefore needs to be comprehensive and penetrating, drawing on all the available evidence.
b)	Action taken or to be taken.
c)	Issues arising.
6. FUTURE DEVELOPMENTS	Proposed short-term or long-term future developments, including modifications, should be described and justified.

APPENDIX II

ABSTRACT FROM CNAA AND COURSE EVALUATION BY R. ALEXANDER (1978A)

The guidelines should identify and list a number of key questions to which colleges should be expected to provide answers when submitting actual or proposed evaluation programmes. These might include the following:

(i) On what view of the accountability relationship between members of the institution and between the institution and relevant external groups is the programme to be based?

(ii) Who will control the major evaluation decisions relating to what to evaluate, how, by whom, for what purposes, and for what audiences?

(iii) By what means will the programme be protected from manipulation by sectional interests?

(iv) What purposes is the programme intended to serve?

(v) What will be the relationship between different institutional forms of evaluation such as course evaluation, the assessment of student performance, the planning and internal/external validation of course proposals.

(vi) What will be the relationship between evaluation and course management bodies and decisions?

(vii) What will be the organizational framework within which the programme will be undertaken?

(viii) What human and material resources will the programme require and what will be made available?

(ix) Who will undertake the evaluation?

(x) What aspects of courses, teaching, learning and related activities will be evaluated?

(xi) What will be the main criteria for judgement of the quality, effectiveness, etc of such activities?

(xii) What methods will be used and how will their quality be ensured?

(xiii) Who will constitute the major sources of evaluation 'evidence'?

(xiv) Who will write reports?

(xv) What will be the mechanism for disseminating evaluation findings and to whom will reports be made available?

(xvi) By what processes will evaluation be used to encourage or promote course improvement, course development, staff development and improved pedagogy?

(xvii) How will the evaluation itself be checked, evaluated or audited?

These are first order questions and each engenders subsidiary questions.

28 Course Evaluation

STUDENT FEEDBACK AT NORTH EAST LONDON POLYTECHNIC

Michael Laycock North East London Polytechnic
Reported by Joanna Tait

This presentation by Mike Laycock described the approach and work of the Student Feedback Project, which has provided since 1973 a confidential service to teaching staff for the evaluation of their individual teaching methods and for evaluation of whole courses or components of them. The service was provided only when requested, and emphasis was placed upon the need to negotiate and agree with both students and teaching staff the purpose, basis and criteria used in each evaluation exercise. Reference was made to the inevitable conflict between the need to maintain the service as confidential, and pressures from management to use the service as an institutional tool for evaluation.

For further information about the Student Feedback Project, contact Mike Laycock, Barking Precinct, North East London Polytechnic.

29 Validity

VALIDITY OF INDICATORS OF PERFORMANCE (1)

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After some eighty years of study, quite a lot is known about the parameters, statistical reliability and validity involved in the study of the wide variety of performance indicators that are available to us, and given the description of a proposed new procedure, it is relatively easy to make a fairly accurate guess about its suitability for any purpose, provided that purpose can be specified with reasonable exactitude. But questions of function and purpose raise issues which can be both interesting and intractable.

The basic paradigm is simple enough. An 'indicator' will comprise some judgement about an attribute which need have no value other than that it provides the basis for inferring the extent to which some other attribute will manifest. This other attribute in our context is of course the 'performance', and it provides the criterion in terms of which the suitability of the indicator is to be judged. It is important to assert that an indicator is a judgement, rather than a set of observations that lead to a judgement, since this enables us to deal with hunches, intuitions, and so on, simply as particular kinds of indicator for which the basis for judgement cannot be made explicit. Unless we do this, we cannot bring them into the domain of the validity paradigm at all.

In the simplest cases, the indicator judgement arises on the basis of a defined set of observations, which determine it on the basis of a defined set of rules. The further judgement, as to whether the indicator provides an acceptable basis for inferences about the relevant performance (ie the judgement about 'validity') is then usually based on statistical considerations involving the calculation of some kind of numerical index of correlation between indicator and criterion. Such an approach can of course only operate if both the indicator statement and the criterion statement can be expressed in numerical, or at least quasi-numerical terms. There can be little doubt that this particular interpretation of the paradigm has great value, but it is not the only possible interpretation, and there is no reason in principle why both indicator and criterion statements should not remain in verbal terms, and the relationship between them be judged without recourse to statistical manipulations. It seems very doubtful, however, whether the indicator/criterion relationship can be judged without recourse to statistical notions.

If we chose to be simple-minded, it would be justifiable to insist that an indicator of performance was necessarily descriptive in its function, and must therefore be (in effect) some kind of attainment test. On this view, the set of observations associated with an indicator would need to be judged in terms of only one criterion - the extent to which these observations provided a representative sampling of the whole field of observations relevant to the description of the performance involved. Only very seldom are we actually interested in description in its own right, however. We seek descriptions because we are really interested in basing predictions on them. All too often we seek to validate indicators against criteria which are actually no more than putative predictors, which themselves need to be validated. 'A' level results provide a case in point. We are very seldom interested in them as criteria in their own right, but use them in an attempt to predict university degree results, or the ability to profit from an industrial training course, and so on. It is difficult not to feel that it might be better to recognize that a single, general-purpose indicator is unlikely to have any substantial predictive validity over the whole range of possible criteria to which it might be directed.

There is indeed a general tendency to overlook the fact that a criterion which seems to be of central concern in its own right, is often itself only an indicator of something else which should be the main subject for scrutiny. The ability to produce the right answer to a particular mathematical problem can justifiably be regarded as a component of a criterion, under some circumstances. However, many examples could be adduced of situations in which the real criterion does not necessarily reside in the production of a correct answer, but rather (for example) in the demonstration that certain skills in analysis have been acquired. The existence of particular skills may sometimes be inferred with confidence from the production of correct answers, but this is by no means always the case.

One of the most interesting aspects of the validity problem arises from the difficulty of selecting appropriate criteria, against which the validity of an indicator might be judged. There can be no such thing as an all-embracing definition of (for example) 'mathematical attainment', even in a limited field of mathematical studies. Against what sort of operational definition is a potential indicator to be judged, therefore? In her evaluation studies for the Royal College of General Practitioners, Susie Barry has highlighted the problem of operationalization, in an acute form. After a course designed to introduce them to basic educational theory, groups of general practitioner trainers demonstrated their understanding of the principles involved by obtaining very satisfactory scores in an appropriately designed test of knowledge and understanding. When re-tested some months later, however, their scores in the same test showed a marked decline. In spite of this, the same subjects were able to demonstrate in the de[illegible] of actual training courses that they were able to make insightful use of those sample principles which they were no longer able to verbalize effectively in the context of a paper and pencil test. Two different operationalizations - leading to two totally different indications about validity. Such considerations lead straight on to a further point of considerable importance. One cannot perform a satisfactory validation if the 'structure' of the relevant criterion is unknown. By a knowledge of structure I mean that the dimensionality of the criterion has to be judged, and I would add that it has to be empirically determined, if possible. I still remember with certain anguish attempting to find satisfactory predictive indicators for a university degree which turned out eventually to have a very unusual structure, in that two of its components (both concerned with the assessment of practical work) correlated negatively with the remainder!

Everything I have said so far, should suggest that one ventures on to a minefield when any sort of validity problem is examined. It is something of a relief, therefore, to point out that in one respect at least the matter is less complex than seems often to be imagined. I refer here to the entirely spurious distinction which is often made between so-called objective and so-called subjective types of indicator. If it is accepted that indicators are judgements, then in the last analysis they must always be subjective. The only real distinction between these two kinds of indicator is that which can be made between the case where one deals directly with data which purport to derive from a formal operationalization of the criterion, and the different case where the data are derived from informal operationalizations which are seldom even partly explicit, and which can therefore vary from one observer to another. In principle, there is no reason at all why reports of subjective states should not constitute data of very high quality. Devices such as repertory-grid techniques make it possible to collect 'subjective' data in a form which is directly accessible to the whole armament of psychometric examination, and Wundt showed us how objective subjective data could be, nearly a century ago, in his classic studies of sensation and perception.

One of the many great services that the phenomenological schools of psychology have performed, has been to rub our noses in the fact that every demonstration of a relationship is intrinsically sample-bound. It is my personal view that this is one of the few things they have said about the problems of scientific inference which was not said rather more elegantly by some late nineteenth-century physicists. Nevertheless, it is a matter of great importance, and it is quite extraordinary, for example, that although the predictive utility of IQ testing has been amply demonstrated in western communities, nothing like a comparable validation has been attempted in other cultures. Every validation exercise is sample-bound and it is only the steady accumulation of replications in a wide diversity of samples that can justify the widespread use of any particular indicator. One of the difficulties here is to discern those characteristics of samples in respect of which diversity needs to be sought. In my own work, for example, it has become abundantly clear that IQ tests have substantial predictive validity to university examinations of some kinds in samples of stable extraverts, but not in samples of high-drive introverts.

In summary, I hope that I have demonstrated that there is no magic indicator, no magic methodology (and certainly no magic *lack* of methodology). The exploration of the validity of indicators is inevitably a difficult exercise which combines both science and art, and which calls on intuition, analysis, judgement, and patience. Circumstances will compel us to interpret the basic validation paradigm in a variety of ways. What is inexcusable is not to address that paradigm at all.

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30 Validity
VALIDITY OF INDICATORS OF PERFORMANCE (2)

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The raison d'être of indicators of performance must be to expedite the making of decisions and judgements, whether they are about individuals or institutions. It is convenient, obviously, in making a decision about a complex system, to be able to break down the descriptions of it into a number of key factors, to quantify these and then to manipulate them somehow until a decision emerges. For example, in making a decision about the employment of a graduate, it is very useful to have had a collection of academics distil their experience of a student's abilities into a single number. Although it gives a rather incomplete picture of the student, it would be impossibly inefficient if every employer had to go through the same procedure as every examiner. But, unfortunately, the very properties that make indicators of performance useful - the fact that they reduce a complexity of subjective judgements to a single objective measure, and the fact that they are context-free (eg degree class is taken as an indicator of ability to do research, to teach, or to practise a variety of other professions) - these very properties also call into question the validity of the indicators themselves.

The assumption that underlies the objective, context-independent measure is that there is some property of the individual, such as intelligence, which is stable, generalizable and quantifiable. But individual's abilities vary greatly according to the context within which they are operating. There are several examples of this in the literature on case study research[1], and it is something that must be very familiar to all of us from personal experience: a student who works diligently on one course is indolent in another; a student who is self-disciplined in working for exams is disorganized in his research work, and so on. Thus properties such as intelligence, initiative, aptitude for learning, etc are not stable and consistent for individuals and it does not make sense to use them as though they are.

There is a further problematic assumption underlying the objective measure, and that is the assumption of an objective reality. Again, there are examples from the case study literature[1] where subjective realities far outnumber the supposed objective reality. Consider the classroom teacher from the point of view of his students - one thinks he is very clear, and another finds him completely obscure. Does it make sense to ask how good a teacher he really is? Does the objective measure, given by his average score, or some more sophisticated statistic, tell us what his teaching performance is really like? No, because his performance is at the same time both clear and obscure. If we wanted to make a sensible decision about his promotion, based, for example, on his merit as a teacher, we would have to understand why he was clear for one student and obscure for another.

It is common, in establishing indicators of performance, for a subjective judgement to be quantified, often on a one to five scale. This, in itself, requires a bit of sleight of hand or brain, but the hocus-pocus is compounded still further when these quantifications are manipulated mathematically. The crowning absurdity is that the single resulting numeral has to be used to make what ought to be a highly complex decision: eg about whether or not to employ a particular graduate.

And yet these decisions are made, and the world continues to function, though not hugely successfully perhaps. The most common argument against abolition of exams, for example, is that 'they seem to work' and 'we haven't got anything better'. So how does this compounded absurdity work at all?

One reason is that decisions do not get made on the basis of numbers alone. The decision-makers do not make or break a polytechnic according to its efficiency.[2] Invariably, decisions are made by incorporating special knowledge, or an understanding of the system - and, no doubt, a certain amount of bias as well. So, added to the objective measure of polytechnic productivity is the knowledge of the decision-maker that this particular polytechnic is in a depressed area, or that this one has a good catchment area, and the data must be interpreted in these contexts.

The chances are, therefore, that in using the various objective indicators that surround us, we take account of their inherent invalidity; knowing that they are neither stable nor generalizable, we interpret the numbers according to our understanding of the relevant system. The problem now is that this special knowledge and understanding has to be well-informed - it must not be outdated or biased. That is why it is so important to have the kind of case study approach to investigations that can provide the qualitative, experiential, subjective, context-dependent descriptions that will give decision-makers a good understanding of the system they are dealing with.

It is unrealistic to suppose that by forever refining our methods of measurement and analysis, by doing multiple trials in multiple contexts, we could ever establish workable, generalizable, objective measures for all the things we think we want to measure. It is scientifically necessary, but insufficiently practicable.

Good case studies of individual students and individual institutions can make us aware of the important factors at work and how they interrelate. They can help us to understand the patterns of influence in one place so that we can more easily make sense of these in our own context.

A research programme consisting of a few good case studies is feasible, and would provide the kind of insight into educational processes that would greatly enhance the validity of existing indicators of performance by helping us to understand better how to use them.

NOTES

1 See, for example, STUBBS, M. and DELAMONT, S. (Eds) (1977) Explorations in Classroom Observation Wiley; and LAURILLARD, D.M. (1979) The processes of student learning Higher Education 8, pp 395-409.

2 See BURNIP, M.S., DURRANDS, K.J., and LINSELL, S. (1979) Indicators in polytechnics. Paper presented at SRHE Annual Conference, Brighton.

31 Validity

WHAT CAN WE LEARN FROM CASE STUDIES?

Roy Cox University of London

The whole person is very much the concern of the case study. Even where the subject is an institution, department or innovation, the case study usually tries to capture the subtlety and complexity of real people rather than ideal types or roles. But where individuals themselves are the case studies then they must be more than a collection of test dimensions and demographic facts. It has been said of case studies that they 'always involve the study of an instance in action' but it is very difficult and perhaps not very useful to try to define them. They do not have standard methodologies; they are eclectic. In a study of student assessment in which I was involved, taped interviews, inventories, questionnaires, psychological tests and a variety of assessment data were used, but in retrospect they suffered from not involving staff interviews to gain a different perspective and diaries to provide a more continuous reflective element. They were designed to be complementary to survey and correlation studies and not simply pilots to generate ideas and hypotheses or aids to interpretation of the statistical data - aspects which are perhaps unduly emphasized by Noel Entwistle and John Wilson (1977). It has often been pointed out that case studies have a dominant role in the exploratory as opposed to the confirmatory phase, and certainly if they are being used to make generalizations about the class from which the case is drawn the generalization may need to be taken up in a more wide-ranging study. But the question of the representativeness of the case may not be so important; what we may want from the case is insight about the case itself which may make us more sensitive to processes and relationships both in similar cases and in those where the immediate similarities are not so obvious.

Such an approach is encouraged by the lack of convincing results from more traditional studies. Entwistle and Wilson (1977) suggest that: 'Most empirical social scientists would expect a substantial proportion of unexplained variance in predicting degree results, but it still comes as a shock to find that academic performance should show low correlations with almost every predictive measure.' Their own cluster analysis approach looked more promising in identifying different patterns of success and failure and may yet do so but they found that in fact such analyses were very similar to their correlation studies. In my own studies, using various multivariate analyses, I had hoped that the wide variety of assessment criteria would avoid the tendency for different predictors to cancel each other out when related to a composite criterion in the form of a degree result. But although there were a few interesting contrasts between exams and course work, in comparative studies (mainly arts) higher anxiety and lower personal integration were associated with success in course work while the reverse was true for exams for instance - and different subjects had different patterns of association. Impulse expression and tolerance of and liking for complexity being negatively related to success in science and positively to arts, on the whole the statistical side of the work was not as interesting as I had hoped. Intellectual disposition was measured in various ways by the tests and it could be thought of as relating to motivation but there was a rather depressing lack of any positive associations with any academic measures.

Entwistle and Wilson, however, did construct a motivation scale of five items but then found that there was practically no relationship between this and any academic results. We may suspect that the way students respond to such items as:

'It's important for me to do really well in the course here.'

or:

'I play any game to win not just for the fun of it.'

may have a very complex and ambivalent relationship to despising yourself for wanting to do well in exams, 'distorting your personality' or conforming to your view of yourself as a parrot - thoughts which have been expressed in case studies. Standardized questions and tests may be helpful but what is important may be different for each individual and his own perception crucial to developing a common understanding. Ambivalence and ambiguity are particularly prominent at adolescence in relation to control, dependency and autonomy, themes which are central to issues of assessment. So the validity of any statements we make about them will be very questionable unless we can explore which attitude is related to which context. Should a girl's motivation rating be high or low who says: 'I'd like my degree to count for something outside the university, I want to show myself I can do it and I want to do it for my family and nothing else ... the exam is the important part of assessment at the moment therefore I gear my efforts automatically to that ... if I wrote for pleasure I would not write anything for sociology, it would be something completely different. Sociology is a completely academic thing to be got over with to allow me to do what I really want to do...'? In one sense she is very highly motivated but in another her academic work means very little to her. Other more typically competitive students who 'like to win' are 'very result-orientated' and work hard, can think their examination work is 'superficial' while their essays are 'turned out like a machine'. Their motivation for academic work is somehow detached from the work itself and case studies can often reveal why this is so and what areas of work are least affected by the type of motivation which is destructive of genuine intellectual commitment. In some cases it was the long-term personal relationships with a project supervisor which helped. With others it can be the peer group which releases them from inhibiting anxieties.

Perhaps the most important contribution which case studies can make is to help us to identify the major developmental tasks which students face as they grow in intellectual, emotional and professional maturity. At the most general level the cases I have studied suggested that students had three different major preoccupations they were consolidating, exploring or defending.

Thus the most mature and independent students had worked through their adolescent crises and were released from pressures which threatened to 'turn them into parrots' or 'distort their personalities'. They could make the most of the opportunities that were offered and adapt constructively to the constraints. They were primarily consolidating but would do so more successfully in a richer environment which encouraged them to express their independence through individual choice and commitment.

The confused students' task was to explore, experiment and experience without loss of direction and commitment or premature closure. They were still living with adolescent authority and identity problems which could generate a high degree of hostility or apathy and withdrawal and the assessment system was often at the centre of their problems. What they needed was encouragement to try to express themselves in different ways, involving different levels of exposure, different social and personal relationships and different constraints and opportunities as to time, access to information and rewriting.

With conformist students the task was a more active one. Their tendency was to defend and conform and they needed to re-learn, to drop some of the habits and defences which had been successful in the past but which were inhibiting and inappropriate for mature adults. They were unlikely to emerge from their 'cubby holes' simply because the opportunities were there. They would need to be put in new situations; but some new forms of assessment could be made less threatening, less dominated by the final mark and the all-knowing or even all-caring authority figure. Responsibility and independence cannot be thrust upon them, but they can perhaps learn to accept these if lines of least resistance are not always open to them. The independent students may thrive on choices but the conformists must learn too.

These rather prescriptive generalizations are not meant to be guides for future action so much as indications of the sort of problems, tasks and directions which begin to emerge as we look at learning and assessment from the student's point of view and in relation to individual case studies. But this rather crude approach in terms of three basic tasks is hardly adequate even as a beginning and this is not simply to say that real students do not fit such simple categories. We need other types and levels of analysis such as Perry's stages of intellectual development, Marton and Saljo's (1976) levels of cognitive processing and others which help us to understand and respect the changing individuality of our students. But I find the more I work with case studies the more I come to believe that while the professional researcher may still have an important role the more important learning may come not from reading research reports but from students and staff as co-researchers working together to understand how their own developing desires, needs, perceptions, expectations, preoccupations, styles of thinking, working, writing and feeling fit with the demands and opportunities of the procedures, places and other people who make up higher education. The case studies showed not only a depressing lack of fit but a lack of opportunity to talk about it too. A third-year research interview should not be the time or occasion for a student to say: 'This is the first time I really thought seriously about what my course means to me.'

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COMMENTARY

Donald Bligh Exeter University

We are inclined to think that an indicator of performance is 'valid' if what it indicates is true. In philosophy there are three common theories of truth, and while the three contributors to this section would probably not wish to see themselves as committed to any one of them, their differences in emphasis resemble the three philosophical theories. In the correspondence theory of truth a statement is said to be true if it corresponds to the facts. Desmond Furneaux sees an indicator of performance as valid if it corresponds with the performance. For example 'A' levels are valid predictors in so far as they correspond with later performance. In the pragmatic theory of truth something is true if it works in practice. Diana Laurillard is concerned with decision making. Indicators of performance are valid in so far as they are useful when taking decisions. In the coherence theory of truth the statement is true in so far as it is consistent with our whole corpus of knowledge, ideas and belief. In the same way, Roy Cox is concerned with the whole person and to capture the subtlety and complexity of people and institutions rather than ideal types, test dimensions or demographic facts.

Roy Cox emphasizes the uniqueness of each individual, wants to make us more sensitive to processes and relationships and therefore hesitates to generalize. Of the three contributors, he is nearest to Michael Scriven's goal-free evaluation. He speaks of gaining insight rather than passing judgement. His approach is exploratory, eclectic and descriptive, emphasizing the details of a specific context. In contrast, Desmond Furneaux asserts that indicators are judgements; they have recourse to statistical notions, are based upon generalizations and are often implicitly comparative. The process of inquiry is to disconfirm hypotheses or generalizations derived from selected observations (samples) judged to be representative (ie corresponding in some way with all possible relevant observations). While it is difficult to imagine a decision which does not assume generalizations or general principles, Diana Laurillard believes that, in practice, they cannot all be established and thinks that context-dependent descriptions which are qualitative, experiential and subjective 'will give decision-makers a good understanding of the system they are dealing with'.

These three papers reveal a major dilemma of contemporary educational research. The very idea that we should deliberately try to educate people assumes generalizations about its benefits. To establish any generalizations is difficult; not to use them is not to do anything at all. In practice what we always do is to act upon inadequate information by making illegitimate generalizations. None of the indicators of performance mentioned in this book can be used without making an illegitimate generalization about their usefulness in a different context.

PANEL DISCUSSION

Clive Church   University of Lancaster

For the first time the Society's annual conference included a discussion. This was led by a panel consisting of two of the keynote speakers, Mr Bethel and Professor Sizer, and Professor Gareth Williams, with Dr Clive Church as chairman. The session was designed to enable the conference to consider the themes around which it had been built and their significance and to provide more room for discussion of general issues. The keynote speakers, who introduced the session by giving their own brief thoughts on the conference, were agreed that it had shown up certain weaknesses in the research presently under way on indicators of performance and in the role that SRHE plays in the stimulating of such research. Virtually all the contributions, it was pointed out, were on the third theme. And even here contributions did not pay sufficient attention to changing student perceptions and contexts. The national and institutional themes were not given very much coverage. Research on these, any more than on the third theme, did not seem to be getting home to decision-makers within higher education. Nor was such research as had been reported at the conference apparently being undertaken in full knowledge of research on similar topics undertaken in other fields. Professor Sizer emphasized the need for research into institutional objectives without which institutions would be hard-pressed to protect their student numbers. It was also pointed out that the mix of students was changing quite drastically.

Mr Thompson's keynote speech was interpreted as saying that the DES was moving away from participation as an indicator of performance and towards preparation of people for employment as an aim and indicator. This did not mean manpower planning but was to be understood in a rather broader sense. In view of this the panel felt it was urgent to defend scholarship and other values of higher education about which those in the field had perhaps been complacent during the years of expansion.

The subsequent discussion touched on three issues arising from these initial statements. Firstly it was pointed out that efficiency at the national level could threaten efficiency at the institutional level. It was obvious that the existing staff-student ratio was no longer sacrosanct. This might therefore be squeezed in order to achieve national aims within higher education. Secondly, the present government was felt to be seeking either to cut government expenditure, and by implication with no particular interest in higher education behind this, or to reduce the age participation rate even further in order to achieve quick educational returns. Historically, however, it seemed that quick returns were never a feature of higher education. In the case of Humboldt and Arnold in the nineteenth century, the reforms which they had pioneered took some fifty years to come to fruition.

Finally, it was agreed that the situation which now faced higher education called for unity both inside institutions and in the higher education system in general. There needed to be more projection of the value of higher education outside institutions and more thinking about the likely situation in the 1990s. SRHE was seen to have a major role in this, provided it broadened its membership to take in those who were not professionally involved in educational research. It could then function as a multi-disciplinary think-tank or forum for higher education, independent both of the binary divide and other divisions within higher education.

EVALUATION OF THE CONFERENCE

Leo Evans The City University
Summarized by David Billing

A questionnaire was given to all participants, and 50 replies received. Information was gained on the interest and effectiveness of presentation of each of the sessions, and on overall feelings about expectations, achievements, the contributions as a whole, and the organization and ambience of the conference.

Expectations were varied:

1 Identification of indicators of performance, their value and their effectiveness.
2 Critical discussion of factors determining judgements on effectiveness of higher education.
3 New information on course evaluation, student performance staff performance, institutional organization and resource management.
4 Exchange of ideas and discovery of new developments in evaluation of teaching, learning and courses.
5 Practical help in assessment and evaluation.
6 Receipt of definite research findings as opposed to more common vague theorizing.
7 Identification of people with very similar research interests/activities.
8 Renewal of old contacts and making new ones.
9 Getting the unexpected.

Achievements showed that many of these expectations had been met but that the informal part of the conference had clearly been more successful than the formal proceedings:

1 Moderate increase in knowledge of indicators of performance.
2 Ideas and material to take back to own institution.
3 Nice and stimulating to meet people working and doing research. Useful contacts made. Useful to meet diverse backgrounds and interest. Highly useful in meeting and discussing specific items of own choice with particular individuals.
4 Serendipity principle worked. Organizers had only to set up the conditions and invite the best people and sit back.

However, these feelings were not universal and there were disappointments:

1 Showed that performance indicators are not very well developed, or very well understood. Intuitive management is just as satisfactory.
2 Not enough emphasis on performance; too much on description of systems.
3 Too heterogeneous. Too many themes. Too vague and general. Main questions not really tackled.
4 Too theoretical and not empirical enough.
5 Not very useful in providing techniques.
6 Less research than abstracts indicated but more than last year.
7 Disappointingly few delegates concerned with resource allocation and management.
8 Colleges of higher education neglected.
9 Not a very sophisticated level of debate.

10 Too many 'read' papers.

11 Confirmed the sheer incompetance of most of the lecturers. Papers not given the preparation a conference such as this deserves.

12 Good optional sessions but rather ill-founded plenary sessions.

13 Not enough time for discussion. Speakers not allowed enough time. Gave up attending 30-45 minute sessions with more than two papers. Extraordinary timetable a serious failure.

Thus, if the major achievement was in providing informal contact, the major failure was clearly in attempting to cover too much, and, in doing so, to arrange an over-tight timetable with inadequate time for most speakers and for formal discussion. The conference committee had hoped that the need for compression would have the beneficial effect of demanding self-discipline from speakers, and winning stimulating and efficient communication. One participant suggested that keynote addresses could have been followed up by optional small group sessions.

Comments on the contributions to the conference as a whole generally reinforced the above views. Interest in the sessions was quite high overall, but presentation effectiveness was mediocre. Comments on the individual sessions reinforced the comparative weakness of the keynote addresses, the lack of time in the optional sessions, the stultifying and inefficient effect of speakers reading their papers, and the generally bad presentations. The workshops were generally thought to be poor, since they were not used as workshops.

The organization of the conference was felt generally to be very good, apart from the inadequacy of time within the optional sessions and some Brighton rather than SRHE problems - bad acoustics in large hall, uncomfortable seating, lack of sign-posting. The provision of abstracts was welcomed. Keynote speakers were thought to need more detailed briefing in spite of the fact that for the first time they were briefed personally by the conference chairman, and two of them were able to meet. There was a division of opinion on the desirability of many parallel sessions; the concensus view might be that more vigorous selection of papers would reduce the number of parallel sessions or provide more time in each. One participant would have preferred each theme to have continued 'vertically' through the conference so that all of its sessions could be attended, which parallel sessions with the same theme could not be ; this point emphasizes the excessive breadth of the conference.

The section in the questionnaire on ambience drew comments mainly on the social arrangements and on the physical facilities. The dinner and other social functions were seen to be an excellent idea, but life at the Falmer site was by contrast spartan.

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